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ABSTRACT

This handbook is intended for use by South Carolina vocational educators who are responsible for teaching special needs students who have been integrated into the regular vocational classes. It begins with a discussion of state standards and federal regulations dealing with handicapped and disadvantaged students. Material is then presented on eight major handicapping conditions: (1) physically and orthopedically handicapped, (2) mentally handicapped, (3) visually handicapped, (4) hearing handicapped, (5) emotionally handicapped, (6) speech handicapped, (7) learning disabled, and (8) disadvantaged. Information related to each of these conditions is presented according to the following format: description of the handicapping condition, unique needs of students with the handicapping condition, strategies for working with the handicapped student in a vocational education classroom, and an annotated bibliography of print and nonprint materials, resource organizations, and exemplary programs. (YLB)

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FOREWORD

Working with Handicapped and Disadvantaged Students in Vocational Education was prepared as a handbook for use by South Carolina's vocational educators who are responsible for teaching learners with special needs. Mainstreaming these students into the classroom with other vocational education students is often necessary to provide them the environment in which they can learn to perform successfully. The positive attitude of the educator toward special students can serve as a determinant to their success in the vocational education program and adjustment to the working world.

This handbook was designed to broaden your understanding of the needs of the special learner and to suggest strategies for approaching your instruction. The authors encourage you to greet boldly the task of serving the special student whose education has been entrusted, in part, to you.

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INTRODUCTION

South Carolina educators with successful experience in teaching special needs learners provided the basic content for this handbook. Beginning with a discussion of federal legislation and State regulations, the curriculum committee organized the material according to seven major handicapping conditions:

orthopedic
mental
visual and hearing
emotional
speech
learning disabled
disadvantaged

Information related to each of the seven handicapping conditions is presented according to the following format:

I. Description of the Handicapping Condition
II. Unique Needs of Students with the Handicapping Condition
III. Strategies for Working with the Handicapped Student in a Vocational Education Classroom
IV. Annotated Bibliography

In order to provide additional opportunities for the special needs learner, the curriculum committee urges establishment of a cooperative network of teachers, counselors, administrators, support service staff and community resource personnel. It is hoped that the information contained in **Working with Handicapped and Disadvantaged Students in Vocational Education** will assist in providing a base of knowledge from which to begin building this cooperative effort.

STATE STANDARDS

In December 1980, the South Carolina Board of Education adopted six standards to be addressed by educators who deal with handicapped and disadvantaged students enrolled in vocational education programs. Used on a basis for program evaluation, the standards are cited in the **South Carolina State Plan for Vocational-Technical Education** (FY 1983-1987):

- Students identified as handicapped and requiring additional or modified vocational education instruction, services or materials shall be enrolled after an Individualized Education Program (IEP) has been prepared, as prescribed under the provisions of the Education for the Handicapped Act (P.L. 94-142) and which includes a determination of the need for vocational education.

- The appropriate vocational education staff or faculty member shall be a member of the IEP committee developing the vocational component for handicapped students whose needs may be met by participating in a vocational program. The IEP shall state the short-term educational objectives to be achieved and the instructional strategies to be utilized by the vocational teacher.

- A copy of the vocational component of the IEP shall be on file with the appropriate vocational teacher before an identified handicapped student is enrolled in a vocational course.

- Each identified handicapped student enrolled in vocational education shall be evaluated annually through procedures and criteria described in the IEP.

- When students identified as "disadvantaged" are enrolled in vocational education courses, there shall be on file with the appropriate vocational instructor a copy of a district-wide plan describing the additional special services, assistance, or curriculum modifications that are being provided to enable the students to succeed in the vocational education program.

- When disadvantaged or handicapped students are enrolled in vocational courses, they shall receive appropriate vocational services and materials.

The State Department of Education, Office of Programs for the Handicapped, publishes a document which presents information regarding "State Board of Education regulations for the evaluation and placement of handicapped children into/out of appropriate programs....Additionally, supportive listings from various test producers are provided as information." The document, **Procedures for Survey, Screening, Evaluation, Placement, and Dismissal of Children into/out of Programs for the Handicapped** (updated spring 1978), contains a comprehensive table of contents.

Federal Definitions
Protection in Evaluation Procedures
Suggested Methods of Surveying Population
Community Survey
School Survey
Specific Screening Procedures
Educable Mentally Handicapped
Trainable Mentally Handicapped
Speech and Language Handicapped
Hearing Handicapped
Orthopedically Handicapped
Visually Handicapped
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Deaf-Blind
Homebound
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Test Publishers (Appendix C)
Illustrations of Adaptive Behavior Levels by Age (Appendix D)
Additional Test Reference Listing (Appendix E)
Sample Developmental Scale (Appendix F)
Hiskey-Nebraska Abilities Guide (Appendix G)
Psycho-Educational Diagnostic Materials Currently in Use at Perkins School for the Blind (Appendix H)

FEDERAL REGULATIONS

Given the mandate from the courts and the petitions from the people, Congress began in the early 1970s the slow process of passing laws to establsh constitutional rights for handicapped individuals. The lengthy process yielded three major laws affecting vocational education for the handicapped: the Rehabilitation Act of 1973; the Education of the Handicapped Act, amended in 1975; and the Vocational Education Act of 1963, amended in 1976. These three laws complemented the Civil Rights Act of 1964, a commitment of federal government to equal educational programs and opportunities for all citizenry.

Major provisions of the legislation can be highlighted as follows:

- In any program receiving federal financial assistance, such as vocational education, discrimination is prohibited on the basis of race, color, national origin, and handicap.
- Twenty percent of funds are to be spent for vocational education programs and services for disadvantaged students (including those who have limited-English proficiency).
- Ten percent of funds are earmarked for vocational education programs and services for handicapped students.
- Individualized education programs (IEPs) are required for handicapped students and must indicate all programs and services which the pupils will receive.

A comprehensive description of the three major pieces of legislation affecting vocational education for the handicapped population can be found by the interested reader in a technical report prepared for the Texas Education Agency in 1978 - **Vocational Education for the Handicapped: Resource Guide to Federal Regulations.*** The report first clarifies the regulations of each law; then it compares and analyzes the major points of the regulations and the manner in which they relate to the special needs of handicapped youth. More specifically, the publication discusses the manner in which these laws relate to special and vocational educators. (Ordering details are cited in the footnote below.)

In view of the federal legislation, special needs students must be provided with increased opportunities to enter educational programs which meet their vocational needs. Vocational education teachers will increasingly be serving special needs students in the regular vocational classroom although the best vocational placement for some students will continue to be a modified vocational education program.

* **Vocational Education for the Handicapped: Resource Guide to Federal Regulations:** A technical report prepared for the Texas Education Agency, Department of Special Education, 1978, by William Halloran, Theodore Foley II, Jan Razeghi, and Marc Hull. The publication was supported in part by Research Grant Number G0077002536, Project Number 498AH70179, from the Bureau of Occupational and Adult Education, Office of Education, Department of Health, Education, and Welfare, Washington, D.C. It was also supported in part by a grant with the Bureau of Education for the Handicapped, Office of Education, Department of Health, Education, and Welfare, under Public Law 91-230, EHA, Title VI, Part C: Contact Number OEC-O-7898. Of particular significance are pages 9-71.

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PHYSICALLY AND ORTHOPEDICALLY HANDICAPPED

Introduction

This chapter discusses the needs of physically and orthopedically handicapped students. Teachers should keep in mind that although physically and orthopedically handicapped students may have multiple handicaps such as speech, hearing, or visual impairments, the majority do not have intellectual deficits. Additional care may need to be taken in order to understand students with speech defects or to learn a special communication system. Other sections of this resource should be consulted for specific information regarding speech, vision, and hearing impairments.

Physically and orthopedically handicapped students are often capable of achieving the same vocational goals as nonhandicapped students and should, therefore, be given equal opportunities to do so. It is important that handicapped students be recognized as people, with the same needs and goals as others.

There are many types of physical and orthopedic handicaps, the most common of which will be discussed in this section. Other handicaps which affect posture, normal walking, stamina and/or psychological characteristics (but which may not directly affect vocational training or strategies needed for working with particular students) include clubfoot, scoliosis, temporary orthopedic conditions, osteogenesis imperfecta (imperfect bone formation), and poliomyelitis (polio) and will not be discussed here. **Physically Handicapped Children: A Medical Atlas for Teachers** (E. E. Bleck and D. A. Nagal, 1975) is a good resource on those conditions.

According to Gearheart (1980) "physically handicapped refers to individuals with defects of the limbs or other health problems. As generally used in special education, it does not include conditions such as mental retardation, emotional disturbance, blindness, deafness, or learning disabilities." Gearheart (1980) also states, "orthopedically handicapped (or impaired) refers to those with disabilities or reduced functioning of joints or muscles. It can also refer to those with bone problems."

Conditions which affect the physical status and health of students and which may affect vocational performance will be discussed. Because there are many different conditions, the format here has been altered from that of the remaining text. Each condition will be discussed in terms of its description and the unique needs of students. Strategies can, however, be developed which effectively aid several conditions so they will be discussed on more general terms later in the chapter. Similarities in adaptive equipment and machinery adaptations will also be discussed in the section on strategies.

Cerebral Palsy

Description

"Cerebral-brain, palsy-paralysis....is a nonprogressive disorder of movement or posture beginning in childhood due to malfunction or damage to the brain." (Bleck and Nagal, 1975) Sixty-eight percent of cerebral palsy cases are congenital--occurring during the fetal period or at birth. Most other cases are acquired--the effect left by an injury or illness damaging the brain.

Cerebral palsy is generally described with the specific motor and limb involvement attached to the term (i.e., cerebral palsy, spastic, diplegia). As outlined in Bleck and Nagal (1975), the following definitions of the types were classified by the American Academy for Cerebral Palsy in 1956.

I. Physiological classification (movement)
   - A. Spasticity - strong muscle contractions; often repetitive and involuntary; associated with sudden attempts to move or stretch
   - B. Athetosis - involuntary purposeless movement; purposeful movement is contorted
   - C. Rigidity - severely rigid muscle; not moved voluntarily
   - D. Ataxia - lack of balance sensation; walk with feet apart rolling trunk and arms for balance
   - E. Tremor - shakiness of limb involved
     1. intentional - noticeable only when an attempt is made to use the involved limb
     2. continuous - constant shaking; associated more with adults
   - F. Mixed - combination of others, especially spasticity and athetosis

II. Topographical classification (limb involvement)
   - A. Monoplegia - one limb
   - B. Hemiplegia - upper and lower limb, same side
   - C. Paraplegia - lower limbs only
   - D. Diplegia - major involvement in lower limbs and minor in upper limbs
   - E. Triplegia - three limbs; usually one upper limb and both lower
   - F. Quadriplegia - major involvement of all four limbs (also called tetraplegia)
   - G. Double Hemiplegia - upper limbs more involved than lower (term rarely used)

Cerebral palsy often involves other types of handicapping conditions. The following list cites several conditions which may accompany those previously listed. (Some have frequency or occurrence notations.)

I. Oral-Dental
   - A. Difficulty swallowing
   - B. Drooling
   - C. Tooth grinding
   - D. Tooth enamel malformation
   - E. Dental Caries (due to grinding and malformation)

II. Speech - effects 48-49 percent of cases
   - A. Garbled speech patterns
   - B. Motor limitations of mouth and tongue

III. Hearing loss - common in athetosis but uncommon in spasticity
(See section on Hearing Impaired.)
IV. Visual
A. Farsightedness - Hyeropia
B. Nearsightedness - Myopia
C. Crossed eyes - Estropia
D. Turned out eyes - Extropia
E. Inability to gaze upward
(See section on Visually Impaired.)
V. Sensory deficits - limitation of sensation felt in affected limb(s)
VI. Convulsive Disorders
A. 86 percent of spastic persons
B. 12 percent of athetoid persons
(See Convulsive Disorders, following in this chapter.)
VII. Intellectual Capacity
A. Not affected
1. 25 percent average to above average intelligence
2. Equal to majority of mainstreamed students
B. Affected
1. Some are learning disabled or mentally handicapped
2. Severity dependent on severity of brain damage
VIII. Perceptual Disorders
A. Some visual-motor difficulty
B. Possible developmental lag

Unique Needs

Students with cerebral palsy need many special considerations. The following list is an overview of those characteristics common to many.

1. A need to consciously think of the appropriate actions which should be performed.
2. A need for sufficient reaction time.
3. Limited experiences and perceptions.
4. Limited physical coordination in either fine motor control (fingers and hands) or in gross motor control (large arm movements).
5. A difficulty in performing simple tasks, which may be due to any or all of the difficulties listed above (i.e., tying a knot or a bow).
6. A need to be taught in small units.
7. A need for rest, as these students fatigue easily.
8. A need for equipment adapted to accommodate wheel chairs, uncoordination, reduced strength, etc. (See strategies section for specific adaptation suggestions.)
9. Difficulty sitting upright.
10. Low endurance levels which may affect learning.
    - Boredom
    - Hostility
    - Lack of motivation
    - Depression
    - Dependency

Spinal Cord Injuries

Description

Injuries to the spinal cord result in temporary or permanent paralysis of the muscles of the limbs....Permanent paralysis is caused by fractures and dislocations which puncture or cut into the spinal cord. (Willard & Spackman, 1978)

Spinal cord injuries are not congenital problems; they are the results of physical traumas. The most frequent cause is automobile accidents, although sports injuries, stab and gunshot wounds, and falls are among other causes.

There are generally two levels of spinal cord injuries.

I. Quadriplegia
   A. Injury
      1. Cervical - neck and upper shoulder area
      2. High Thoracic - lower shoulder to mid-back
   B. Resulting in muscular deficiencies in
      1. Upper extremities (arms)
      2. Trunk
      3. Lower extremities (legs)

II. Paraplegia
   A. Injury
      1. Thoracic - mid-back to waist
      2. Lumbar - waist and hip area
   B. Results in muscular paralysis of
      1. Trunk
      2. Lower extremities (legs)

III. Quadriparesis and Paraparesis
   A. Severe weakness of affected limbs
   B. Not total paralysis

Some students are injured at or soon after birth so that adjustment to their physical conditions may be well established by the time they enroll in middle or high school vocational classes. Other students may have recent conditions to which they have not adjusted. Emotional, psychological, social, and physical adaptations may be difficult for these students.

Unique Needs

Teachers may need to work closely with students, occupational therapists, physical therapists, parents, and physicians of those students returning for the first time after recent traumas. Adjustment will be difficult for those students whose spinal cords have recently been injured as well as others with whom the students come in contact. Give these students as much encouragement as possible and allow them to bring up discussion of difficulties. Be willing to listen and advise a student's request. The more common problems faced by students with spinal cord injuries include:

- Decubiti (pressure sores; commonly called bedsores)
- Contractures (shortening of muscles)
- Spasticity
- Atrophy (muscle deterioration)
- Weakness
- Urinary track infections

Spina Bifida

Description

Spina bifida is a condition which results from the failure of one or more vertebra to completely close around the spinal cord and its sheath. There are varying degrees of severity that produce symptoms which range from the barely noticeable to severe multiple handicaps. Since the spinal column has closed in normal development by the fourth week of fetal development, no study is available to determine specific cause.

Unique Needs

Students with spina bifida occulta may need no other consideration than that to accommodate canes or crutches. Upper trunk and hand coordination is frequently close to normal. Generally, the intellectual capabilities of students will be normal to slightly below normal for those having spina bifida occulta and meningocele; those with hydrocephalic complications in mylomeningocele may tend to be below normal to trainable mentally handicapped. Some hydrocephalic students can function well in the regular classroom when brain damage is minimal. (Calhoun and Ballowe, 1979)

Since there is frequent bowel and bladder paralysis, many students will need extra time for toilet needs. This situation may be well regulated by students in middle or high school, but there will still be a need for more time to manipulate necessary equipment and to minimize "accidents" which can severely embarrass students. Occasionally some students will need assistance to accomplish toileting tasks (Bleck and Nagal, 1975; Gearheart, 1980). Students with spina bifida may be frequently absent from school for consultations with and corrective measures taken by students' physicians (orthopedic, urological, neurosurgical). (Bleck and Nagal, 1975)

Convulsive Disorders

Description

A convulsive disorder can be defined as a disorder in which sudden shaking and jerking start and stop involuntarily and is generally associated with an unusual amount of electrochemical energy within the brain causing a kind of "short circuit" of normal control systems (Gearheart, 1980). Epilepsy is the most common type of convulsive disorder found in persons older than five years of age. Convulsions associated with high fever can be detected in infants and small children, but rarely develop into permanent conditions. Epilepsy is not a specific disease. It is symptomatic of some abnormality of brain function.

The Epilepsy Foundation characterizes three common types of seizures; grand mal, psychomotor, and petit mal. Following is an outline of the characteristics of each type.

I. Grand Mal Seizure -- Generalized
   - A. Violent shaking of the body
   - B. Falls to floor or ground
   - C. Loss of consciousness
   - D. Breathing may alter and seem irregular
   - E. Vocalization may occur
   - F. Salivation will probably increase
   - G. Loss of bowel and/or bladder control may occur
   - H. Some degree of rigidity in the body may occur
   - I. Seizure may last less than one minute or more than five minutes. (If seizure lasts longer than 10 minutes or if another occurs almost immediately, medical aid must be obtained.)
   - J. Confusion and sleepiness may occur upon returning to normal consciousness
   - K. Some amount of rest may be needed before resuming activities
   - L. An "aura" may occur which warns of the onset of a seizure
   - M. Recurrence time varies

II. Psychomotor
   - A. Less common
   - B. Inappropriate or purposeless behavior; one or more complex movements
     1. Lip smacking
     2. Repetitive hand, arm, or foot movement
     3. Dressing or undressing
     4. Walking
     5. Repeating words or phrases
   - C. Appears to be in an altered state of consciousness but not "unconscious"
   - D. Reacts adversely to attempts to restrain activities
   - E. Seizure can last less than two minutes or for several hours (commonly two to five minutes)
   - F. Upon regaining normal consciousness, the person may not remember any of the event or may remember varying hallucinations
   - G. Recurrence time varies

III. Petit Mal
- A. Often mistaken for daydreaming
- B. Staring into space
- C. Complextion may momentarily pale
- D. Twitching of eyelid or slight jerking
- E. Duration of five to ten seconds
- F. Upon returning to conscious state, continuation of activity occurs as though nothing had happened
- G. Often not aware of occurrence of seizure
- H. Posture is not lost during seizure
- I. Most common among children
- J. May disappear with onset of puberty
- K. May occur as many as 100 times per day
- L. Variations
  1. Myoclonic: brief convulsion of part of a muscle or small group of muscles; short duration
  2. Akinetic: sudden loss of muscle tone; person drops suddenly, often "catching" him/herself before reaching the ground; may appear as nodding or sudden jerk

Much seizure activity can be fully or partially controlled with anticonvulsant medication. There are several types of medication available and students may be prescribed one or a combination of types.

Side effects occur with many anticonvulsant drugs. Periodic adjustments in medication can create temporary changes in behavior, and behaviors may be displayed which are similar to the side effects listed below. Some of the more common side effects are:

1. Lethargy
2. Skin irritations or sensitivity (e.g., to sunlight)
3. Irritability
4. Dizziness
5. Ataxia (defective coordination)
6. Headaches
7. Nausea
8. Drowsiness

Unique Needs

If teachers suspect that any of their students are having seizures, they should check the students' records or consult the school nurse. Only a physician, after extensive diagnostic testing, can diagnose and treat epilepsy, but the nurse may be aware of a specific diagnosis and may be administering medication. After being informed that some students have seizures, find out what type of seizures and with what frequency they occur. Ask to be told when adjustments in medication are made.

Based on regular hearings conducted by the Commission for the Control of Epilepsy and Its Consequences, the following psychological factors may need to be considered when dealing with epileptic students.

1. Some persons will attempt to lead normal lives and will take seizures in stride.
2. Some persons will withdraw, fearing embarrassment or ridicule.

3. Some fear that others will mistake seizures as drunkenness or disorderly conduct and will withdraw.
4. Some fear rejection and so have difficulty getting along with others or finding work.
5. Some parents of unaffected children will not allow their children to play with epileptic children.
6. Epileptic students are sometimes ostracized in school.
7. Some reports have been made that epileptic students were not allowed to participate in sports or recreational activities.
8. Teens may be reluctant to date for fear of a seizure occurring (especially those experiencing frequent seizures).
9. Teens fear an inability to drive. (Calhoun and Ballowe, 1979)

Surveys indicate that learning and behavior problems are possible in epileptic students although average to above-average intelligence is indicated. This discrepancy could be due to psychological developments discussed above or "may be attributed to side effects of anticonvulsant medication." (Calhoun and Ballowe, 1979)

"Teachers of children with epilepsy have a responsibility to include the children in a full school program and to help other children, parents, and staff understand this disorder." (Calhoun and Ballowe, 1979)

"First Aid" for Grand Mal Seizures

1. Remain caim. The seizure cannot be controlled.
2. Do not restrain the person. Let the seizure run its course.
3. Move harmful objects away from the person.
4. Loosen clothing at neck if necessary
5. Turn the person's head to the side if necessary to release saliva.
6. **Do not force anything between the teeth** -- especially fingers; jaw action can be very strong during a seizure.
7. Allow the person to regain orientation before leaving him/her unattended.
8. Let the person rest for a while after the seizure.
9. Call the school nurse if:
   a. the seizure last over TEN minutes, or if
   b. a second seizure follows the first almost immediately.
10. Inform the parents or physician of the seizure.
11. Tactfully instruct other students beforehand so they will know what to do and will know not to be afraid or alarmed.
12. Emphasize to other students that it is not an illness; it is a neurological dysfunction which can result from a number of causes. (Calhoun and Ballowe, 1979; Gearheart, 1980)

Congenital Physical Deformities

Description

Congenital physical deformities are often manifested in limb deformities and are a result of improper limb bud formation during the first trimester of fetal development. Therefore, persons with congenital physical deformities have only part of a limb or no limb at all. Congenital amputees have adjusted and developed to become quite functional in relation to their handicaps. Prosthetic devices (artificial limbs) may or may not be used by these students, depending upon the disability.

Unusual methods of accomplishing tasks have been developed by some. Students with bilateral (both sides) loss of arms may use their feet and toes to manipulate objects the way others use their hands. Some may use wheelchairs or other ambulation devices for lower extremity deformities.

Generally these students have average to above-average intelligence unless there are multiple handicaps present which affect intellectual functioning. Excluding psychological facts, vocational performance is only limited by the individual's degree of adaptation to his/her disability.

Arthrogyposis

"Arthrogyposis is a congenital disease in which the children are born with stiff joints and weak muscles." (Bleck and Nagal, 1975) The specific cause is unknown but the muscles fail to develop properly in fetal growth, thus limiting fetal movement and possibly causing stiffness in joints. The condition is not hereditary. Extremities are generally small and extended or flexed. Unusually turned hands, wrists, and feet are common. Surgery and plaster casts, and braces may be used as corrective measures but are not always totally effective. Intellectual development is usually normal and students can function well in school when motivated. Students may have associate conditions which may or may not interfere with development or education. These students are less likely to be involved in many vocational programs since hand skills may be limited. Adaptive devices such as those used with cerebral palsied persons may be useful.

Unique Needs

Students with congenital physical deformities may need a variety of special aids similar to those of amputees, or they may be very well adapted physically and need only the acceptance of others. The individual case dictates the specific needs. If these students have not adjusted and they have difficulty relating to others because of their disabilities, involvement in a counseling program may be useful. Teachers should be willing to get involved and to work with these students, counselors, occupational therapists, physical therapists, and family if necessary.

Amputations

Description

Amputation is the removal of a limb due to trauma or disease. The higher the point of amputation on the extremity, the more assistance amputees may need for adjustment. Amputations involving part or all of one or more fingers or toes might require little adjustment in manipulative functions. Amputation of one or more limbs would necessitate a great deal of adjustment for the amputees, as well as adjustments in classroom material and equipment.

Prosthetic devices (artificial limbs) are attached by harnesses or by cinplasty (a pin placed through a muscle which then controls the device). Devices have been developed to be functional as well as cosmetically pleasing in many cases.

Students may or may not have adjusted well to the conditions, depending upon the length of time since the amputation. If students have not fully adapted to their prostheses as functional parts of their bodies, the following considerations should be made when working with them in classrooms, labs, or shops.

1. Amputees experience no functional sensation in the use of the prosthesis and must rely on visual cues to determine correctness of movement.
2. Dominance may need to be changed if the dominant hand was amputated. Lack of coordination may be present until dominance is reestablished in the intact limb.
3. Phantom limb sensations may occur in which the amputee feels sensations associated with missing hands or feet.
4. An adjustment and rehabilitation period is necessary for amputees to relearn manipulation of familiar objects (e.g., pencils, calculators, kitchen tools).
5. Psychological factors which may need to be dealt with can include:
   a. Guilt
   b. Shame
   c. Depression
   d. Refusal to cooperate
   e. Interest in compensation for loss
   f. Excessive eagerness in learning to use the prosthesis and overcome difficulties
   g. Need to be functional
   h. Need to be accepted
   i. Need to discuss and communicate concerns and fears above vocational needs, socialization, and/or self-esteem (Willard and Spackman, 1978)
6. Students experiencing amputation after vocational training has begun may need to reexamine their ability to perform the skills necessary to accomplish the tasks of the job.
7. Enrollment in an alternate program may be necessary, or adjustments may be made regarding the original training program.

Unique Needs

Specific consideration of the emotional and psychological factors involved in amputation are needed for those students not yet adjusted to their condition, as is indicated by the list above. When dealing with students who have not yet adjusted to their condition, consider the following.

1. Be available for consultation when students are ready to discuss their situations.
2. Do not draw undue attention to these students.
3. Do not try to press students into lengthy discussions of their condition.
4. Do not ignore the condition. It is a fact to which the student and others around must become accustomed.
5. Help students develop ways of adapting to their condition and devising ways of adapting equipment to suit their needs.
6. Consult with whom the students work regarding:
   a. Physical abilities
   b. Interests
   c. Intelligence
   d. Work tolerance
   e. Work habits
   f. Motivation to change and to achieve
7. Work with the students, the occupational therapists, and/or counselors in developing each student's program of study and prospects for employment.

Juvenile Rheumatoid Arthritis

Description

Juvenile rheumatoid arthritis is a disease in children and is characterized by inflammation of the joints. Specific cause is unknown, but it appears to be the result of abnormal antibodies which attack body material instead of germs. Climate, diet, and/or patterns of living are not the cause of the inflammation. Permanent remission occurs in 60-70 percent of children with juvenile rheumatoid arthritis after about ten years. (Bleck and Nagal, 1975)

There appears to be three distinct types of juvenile rheumatoid arthritis; systemic, polyarticular, and pauciarticular. Behavior characteristics are as follows.

A. Depression
B. Anger
C. Inhibition and shyness
D. Introversion
E. Changeable moods (directly related to pain level)
F. Slow movements due to:
    1. Pain
    2. Stiffening of joints after prolonged sitting
G. Hearing loss

Treatment includes the following considerations.

A. Aspirin—the prescribed drug of choice by doctors
B. Physical and occupational therapy to keep joints mobile
C. Heat treatment to aid in mobility
D. Reduced stress and strain on joints to prevent reinflammation (Occupational therapy can teach joint protection techniques)
E. Hearing loss may occur as a result of aspirin use (normal hearing regained upon discontinuation of aspirin)

Unique Needs

Arthritic students need some special consideration regarding the strains created by the disease. The following suggestions may be helpful when working with students with juvenile rheumatoid arthritis.

1. Provide arthritic students with a means of venting anger and frustration.
2. Assist students in coping with fear, frustration, pain, and depression.
3. Understand and accept mood swings but help students learn to control them.
4. Be aware that fatigue and pain are real and allow extra time for students to move from class to class and complete written assignments.
5. Empathize with students, but at the same time encourage continuation and completion of work.
6. Use enery-saving approaches and joint protection techniques in tasks in order to limit amount of undue stress placed upon affected joints (see strategies).
7. Allow students to get up and move about the room to loosen joints and prevent stiffening.
8. Use of tape recorders or electric typewriters may aid learning and completion of assignments where involvement of finger joints prevents adequate writing.

Respiratory Conditions

Asthma

Description

Asthma "is labored wheezing breathing caused by interference with the normal flow of air in and out the lungs." (Bleck and Nagal, 1975) Breathing difficulty is caused by constricting muscles, inflammation of lung tissue caused by excess fluid in cell walls, and increase in thickness of lung mucus. Allergies often cause asthmatic attacks; food allergies, pollens, various types of dust, and animal dander are among many causes of asthmatic reactions. Continued medication may tend to control attacks, and control of the environment may also help.

Unique Needs

Asthmatic students may or may not need special consideration in vocational classrooms. The following is a list of potential causes for asthmatic attacks and vocational areas of study which should be avoided by or consideration made for, students with allergic asthma.

1. Food allergies - How economics and food service programs may need to make allowances when preparing foods that cause problems. Students may avoid these classes if numerous allergies exist.
2. Pollen - Agriculture, horticultue, forestry, or gardening courses should be avoided unless medication can control allergic reactions.
3. Dust - Vocational programs such as carpentry, metal work, textile production, household maintenance or custodial services which are high dust producers should only be carefully considered.
4. Animal dander - Animal sciences should be avoided unless medication can control allergic reactions. If students are enrolled who have asthmatic attacks, instructors may need to consider the following classroom management ideas.
    a. Avoid contact with known causes of allergic asthma.
    b. Allow students to take medication if necessary to control an attack. (Be sure, however, that students and teachers are complying with school or district policy regarding administration of medication.)
    c. Allow students to rest a while if necessary after an attack in order to regain strength.
    d. Do not allow students to use attacks as devices to "get their own way."
    e. Treat asthmatic students as any other student and expect the same performance as is expected from all others, given the above considerations.

Heart and Blood Disorders

Congenital Heart Diseases

Description

There are a number of types of congenital heart diseases, of which many can be corrected by medication, surgery, or both. The majority of conditions have been corrected before students enter middle or high school, and direct implications are not related to vocational training. Student records may indicate the presence of congenital heart defects, and there may be related complications which may affect classroom, lab, or shop performance.

Acquired Heart Diseases

Description

1. Rheumatic Fever: A disease which follows strepticoccal infections and which affects several body organs but leaves permanent heart damage to the heart valves. Since rheumatic fever can recur after any strepticoccal infection, antibiotics are prescribed on a continuous basis. The damage caused by rheumatic fever leaves people weak and limits the kind of safe activities in which they can engage. The limitations of individual students should be investigated before a program is developed.
2. Hypertension (High Blood Pressure): This condition may be caused by kidney or endocrine diseases, or it may be of unknown origin. Medication and the extent to which individuals are affected will dictate the type of activities in which they can engage. Families or doctors should be conferred with for details.

Unique Needs of Acquired and Congential Heart Diseases

Consideration regarding strenuous activities must be given to students with congenital or acquired heart diseases. Vocational programs which do not require strenuous physical labor should be preferred. The life expectancy of these students is relatively normal, so preparations for their economic and social futures should be addressed. Fatigue levels of each student should be considered and, depending on the individual, it may be advisable to consult with doctors or occupational therapists for energy conservation and work simplification techniques.

Precautions may need to be taken with any student having a history of heart disease if the following warning signs are observed.

1. Shortness of breath
2. Chest pains
3. Fainting
4. Cyanosis (lack of oxygen to the body resulting in bluish coloring)
5. Very rapid heart beat
6. Unusual fatigue

Allow students to rest and consult the school nurses or physicians if symptoms seem severe.

Hemophilia

Description

"Hemophilia is an hereditary condition in which the blood clots very slowly or not at all." (Bleck and Nagal, 1975) The condition is transmitted from a female carrier to her male offspring. Males are not carries and do not transmit the condition or its tendency to their offspring even though affected by the condition themselves.

Hemophilia is the result of a deficiency of specific clotting proteins which must be present in the blood in order for lacerations (cuts) to stop bleeding and begin to heal. As a result, small cuts and bruises may bleed for several hours or even days if untreated.

Persons with hemophilia must be cautious since the following conditions can cause excessive or spontaneous bleeding.

1. Excessive pressure on weight-bearing joints (knee, hip, shoulder, elbow) can cause internal bleeding and swelling at the joint.
2. External cuts can cause excessive bleeding.
3. Traumas to the body frequently cause internal bleeding.
   a. Blows to the head and neck can be life-threatening.
   b. Minor chest bruises do not often affect the heart and lungs, but internal bleeding may still occur.
   c. Major traumas to the chest area may be life-threatening.
   d. Injuries to the stomach and abdomen may cause major injury to organs such as the liver, spleen, and kidneys. Bleeding of internal organs may actually occur hours or days after the initial trauma.
   e. Injuries from blows (traumas) to arms or legs can result in internal bleeding which may not be detected until external bruises form.

The treatment of hemophilia has been aided by the development of concentrates of the deficient clotting factor. The concentrate is becoming more readily available, and persons can be taught to self-administer them in the event that injury occurs.

In the event that students with hemophilia suffer lacerations or blows to the body, especially to vital areas such as the head, neck or abdomen, the following symptoms warrant medical attention.

1. Head and neck injuries
   a. Serious; medical personnel should be notified
      (1) Headache
      (2) Sleepiness
      (3) Nausea
      (4) Vomiting
   b. Vital; in need of <u>immediate</u> medical attention
      (1) Unequal pupil size
      (2) Slurred speech
      (3) Disorientation
      (4) Confusion
      (5) Muscle weakness, especially in an arm or leg

2. Abdominal injuries
   a) Large bruised area
   b) Abdominal pain
   c) Red or dark brown urine (kidney)
3. Other body area injuries
   a) Bruised areas
   b) Profuse bleeding

Unique Needs

The activity levels of students with hemophilia need to be limited. Contact sports and rough play are prohibited. Vocational training which involves strenuous work and could put strain on joints is not advised. Care may need to be taken if students are working with equipment on which they could easily be cut; however, physical care on the part of students may not necessitate special classroom or lab modifications. Students can usually be relied on to judge for themselves.

It is advisable to confer with the physician of each hemophilic student when planning educational programs. Discuss the program and the physician to determine special care, if any, which may need to be taken.

Juvenile Diabetes Mellitus

Description

Juvenile diabetes mellitus is an inherited metabolism disorder. The body cannot produce insulin, a hormone which aids in the conversion of glucose (a simple sugar) into usuable energy. The glucose is cleaned from the blood stream by the kidneys and is eventually passed out in the urine of the juvenile diabetic. An increase in urine volume accompanies the disorder since glucose contains water.

In order to compensate for the lack of energy-producing substances, the body will use fatty tissue to produre energy. As too much fatty tissue is used the person becomes weak, loses weight, and can lapse into a diabetic coma. Initially the weakening process takes a matter of weeks before a coma is likely, but once insulin treatment has begun, a few days without it can result in a coma.

Students with juvenile diabetes mellitus have learned to inject insulin on a daily basis and to check urine for glucose and acetone levels several times a day. The level of glucose indicates how well the insulin is working, and the presence of acetone indicates that fatty tissue is being used as an energy source, indicating insufficient insulin.

If there is not enough sugar (glucose) in the blood, symptoms of hypoglycemia or an insulin reaction can occur. Symptoms occur rapidly and appear as "headache, dizziness, irritability, blurred vision, nausea, vomiting, profuse sweating, fast heart rate, cold hands and feet, and, eventually convulsions, coma, and death." (Bleck and Nagal, 1975) To counteract this reaction, concentrated amounts of sugar are needed. Fruit juices, nondiet sodas (cola), or hard candies (e.g., Life-Savers) are quick sources of the needed sugar.

According to Bleck and Nagal (1975), the following chart indicates the "Effect of Too Much or Too Little Insulin."

Insulin Reaction (too much insulin)		**Ketoacidiosis** (no insulin)
Onset:	Rapid (matter of minutes)	Gradual (matter of hours)
Symptoms:	Headache	Tiredness
	Nausea	Fatigue
	Vomiting	Polydipsia (drinking lots of liquids)
	Palpitations	Polyphagia (eating excess food)
	Tremulousness	Polyruia (large quantities of urine)
	Irritability	
Skin:	Cold and moist	Warm and dry
Breathing:	Normal or shallow	Deep (air hungry)
Urine Test:	Negative glucose	4 + glucose (normal range 1 + to 3 +)
	Negative acetone	Positive acetone
Treatment:	Sugar	Insulin

The disorder of juvenile diabetes mellitus is not caused by any given activity or by eating the wrong foods or too much of a certain kind of food. It is, as has been stated, an inherited disorder which can be controlled with insulin injections, proper diet, and proper exercise.

Adult onset diabetes is a milder form of the inherited disorder which is a reduction of the amount of insulin produced and is controlled by proper diet and exercise. Insulin injections may be needed with severe forms. Pregnancy, obesity, and certain medications can bring an early onset of the disease.

Unique Needs

Diabetics need to have a controlled diet and exercise plan. Diet can include a variety of foods, but the portion size and the time of day each meal is eaten play an important role in the program. There are certain foods that can be exchanged for others which are similar in nutritive value. An Exchange List is part of the control plan. Generally five meals per day are eaten at approximately the same time of day: breakfast, lunch, afternoon snack, dinner, and bedtime snack.

Consistent exercise at approximately the same time each day also plays an important role. If diabetics engage in more exercise than normal, light snacks should be eaten at half-hour to hour intervals to replace the energy burned.

If diabetic students are following their health plans, no other care needs to be taken on the part of the teacher other than to be aware of the symptoms of hypoglycemia (too much insulin) and ketoacidosis (too little insulin). Diabetic students should be treated as other students in the class.

Sickle Cell Disease

Description

Sickle cell disease is an inherited blood disease in which the red blood cells form flattened sickle-like shapes. These malformed red blood cells have a shortened life span (15-25 days versus 120 days for normal cells), and are frequently rejected by the body and destroyed. This reduction in the number of red blood cells results in anemia. The sickled cells often become rigid when there is

insufficient oxygen in the blood to keep them fluid. The rigidity causes them to stack up and create a blockage at small blood vessels, which restricts proper blood flow to the cells past the blocked area. A "vaso-occlusive episode" occurs which is the deprivation of oxygen to tissues and organs, causing pain and sometimes cellular death. Severe complications can develop when vaso-occlusions occur in organ tissues. (Bleck and Nagal, 1975; Calhoun and Ballowe, 1978) If there is sufficient oxygen present in the body, the red blood cells will remain fluid and will not stack and restrict blood flow.

Sickle cell trait is a combination of sickled and normal red blood cells, and does not create severe problems unless there is a great loss of oxygen. Sickle cell disease (all red blood cells are sickled) and sickle cell trait are predominately found in black populations, but are also found in some populations originating in the eastern Mediterranean region. It is commonly accepted that the condition developed in those regions of Africa and the Mediterranean where malaria incidence is high. It is believed that the trait creates a resistance to malarial infection.

Unique Needs

Persons with sickle cell disease have frequent pain and develop vaso-occlusion crisis of the bones, intestines, spleen, liver, gall bladder, brain and lungs which can become life threatening. Precautions include:

1. Reduced involvement in strenuous activity which results in reduced oxygen in the blood.
2. Treatment and monitoring of respiratory illnesses and infections for development of pneumonia.
3. Physician's care for vaso-occlusive crisis.
4. Avoidance of fatigue, cold, and stressful situations.

Strategies for Working with Orthopedically and Physically Handicapped Students in Vocational Education Classes

Introduction

When determining classroom strategies for physically and orthopedically handicapped persons, the primary consideration of vocational instructors is the adaptation of equipment and facilities and, in some cases, the adaptation of procedures so students can perform skills required for the task. The psychological and emotional aspects of development may need to be worked on as well, especially with those students in the process of adjusting to new conditions and those learning to cope with terminal illnesses.

Many specific psychological aspects of working with these students have been discussed in the special needs sections concerning each disorder. The primary goal of meeting psychological needs of all physically and orthopedically handicapped students will be to assist the students in becoming fully capable adults — the same goals held for all students. All persons need to overcome what they perceive to be their shortcomings. Teachers work with students every day to help them accept themselves as they are and to work toward the goals they feel are important for their lives. Handicapped students are no exception to such human considerations. There are, however, complications and handicaps which need to be overcome, and physical disability is only one.

Attitudes held by students toward "normal people," attitudes each have about his/her own image, attitudes of others toward handicapped students, and problems facing these students regarding social and physical barriers may be more "handicapping" than the condition itself. Wright, in an indepth look at psychological aspects of physical disabilities states, "a physical attribute is a physical disability only when it is seen as a significant barrier to the accomplishment of particular goals." (1960, p. 10) Ms. Wright's book, **Physical Disability - A Psychological Approach**, is a worthwhile source of information and assistance for teachers learning to cope and to help students cope with disabilities.

The conditions discussed in this chapter lend themselves to grouping for the purpose of discussing equipment and strategies. Five areas will be discussed: general strategies, accommodations and strategies for persons in wheelchairs, adaptations and strategies for persons with upper extremity disorders, strategies for terminally ill persons, and strategies for health impaired persons.

General Strategies

1. Use a task analysis approach and analyze each task to determine the physical as well as the intellectual steps involved.
   a. Analyze the student's functioning by individual task analysis and determine adaptive measures necessary for the student to accomplish the task.
   b. Use the analysis to aid in determining necessary structural and equipment changes and modifications.
   c. Teach from the point of difficulty and allow enough time for students to master each step before going on to the next.
   d. Encourage and reinforce progress as needed; frequent encouragement helps everyone work better.

e. Once analysis is made, work with the students to adapt the equipment. Student ideas and work in developing adaptive devices will be a useful learning experience which can be applied to job site experiences.

2. Encourage students to develop available physical resources.
3. Encourage students to develop intellectual resources.
4. Emphasize what can be done and encourage students to do it.
5. Be explicit in instructions and demonstrate whenever possible.
6. Encourage students to develop ways of manipulating equipment after witnessing a demonstration.
7. Discuss techniques or adjustments which would be useful in accomplishing the tasks.
8. Talk with students regarding personal interests and incorporate them into the educational program, allowing students to assist in developing relevant short and long-term goals. If Individual Education Plans (IEPs) are developed, include students in the IEP meetings.
9. Confer with physical therapists and occupational therapists and develop a "team" of instruction to:
   a. Consider and discuss specific skills of the individual.
   b. Discuss adaptations which can facilitate use of equipment by individuals (see attached lists and references).
   c. Discuss handicapping conditions and their implications in more depth.
   d. Consult with one another and develop coordinated programs to reinforce learning.
   e. Develop adaptive materials to suit students.
10. Be aware of and use energy-saving techniques whenever possible.
   a. Be aware of new demands or limitations placed on students' energy.
   b. Use of wheelchairs or walking devices requires an extra expenditure of energy.
   c. Cardiac problems or arthritis may necessitate stopping or altering some activities.
   d. Help students feel comfortable with, and acceptable of the new rate and method working....Frustration, fear, and mental stress can drain energy faster than the actual performance of some tasks.
   e. Provide an atomosphere for training and evaluation that is pleasant, conducive to learning, and allows for exhibition of maximum performance.
   f. Decision-making is an integral part of work simplification.
      (1) Question the reason for doing each task. Is it necessary?
      (2) Is the student best suited to do this task?
      (3) Consider when a task must be completed in relation to other planned activities.
   g. It may be necessary to alternate the task of a passive nature with more active tasks. (Willard and Spackman, 1978, p. 231)
11. Use work simplification techniques and principles devised for physically disabled students (quoted from Willard and Spackman, 1978, pp. 232-233).
   a. Use both hands to work, in opposite and symmetrical motions if possible, smooth flowing path motions in a curve with no angles such as dusting and washing windows.
   b. Lay out work areas with normal reach. Work where the areas of both hands overlap and arrange supplies in a semicircle within normal reach.
   c. Slide -- don't lift and carry....Use wheeled table where work surfaces are broken.

d. Fixed work stations. Have a special place to do each job so that supplies and equipment may always be kept there ready for immediate use.
e. Select equipment that may be used for more than one job; eliminate unnecessary motions....
f. Avoid holding. Use utensils with a flat base, suction cups, rubber mats or electric mixers to free both hands.
g. Let gravity work. A laundry chute, a pan below the level of the cutting board.
h. Pre-position tools. Store small tools in such a way that they are in the right position to grasp and start work immediately. Hang utensils separately within sight.
i. Locate machine control and switches within easy reach....Change the location of switches if possible or insert swtiches in the electric cord for easier use.
j. Sit to work whenever possible....Find a comfortable chair and adjust the workplace height to it; or, if this cannot be changed, fit the chair to the workplace.
k. Select workplace height appropriate for the worker and for the job. The jobs requiring arm motion will need a higher work surface than those requiring arm motion or pressure. There are no 'standard heights,' as body proportions differ.
l. Working conditions. If the surrounding conditions are good, the job will be pleasanter and less tiring. Good light, directed toward the work, good ventilation, comfortable clothing, pleasing colors, and order set the stage for work without strain.
m. Combine tasks when possible to conserve energy (given that the learner can perform the task as a combination).
n. Organize work in the order of its importance.
o. Change the product. Use different raw materials to simplify work or make changes in the finished product. Carefully consider standards and values before making such changes, however.
p. Change the environment. Change arrangement of the large equipment in the work area, change storage areas, and/or methods of storage.
q. Duplicate inexpensive tools and materials which are used in more than one work area so that students have quick access without going to another area or waiting to borrow an item.
r. Change activities of the body. Change body motions, or change sequence of steps. (Cross, Crandall, and Knoll, 1973)

12. Try to end learning experiences with accomplishments whenever possible. This applies to all learners.
13. Develop a unit of study which deals with health, handicaps, and employment. This could be part of studies on work safety or job habits. Involve all students through discussion of job requirements and the contribution all individuals can make when well trained and well motivated. Coordinate the unit with the guidance department and/or health classes if possible.

Accommodations and Strategies for Persons in Wheelchairs or Using Assistive Walking Devices

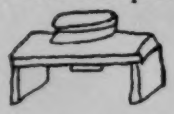
1. Conditions covered in this text which can involve wheelchair confinement are:
   a. Cerebral palsy

b. Spinal cord injuries
c. Spina bifida
d. Congenital physical deformities
e. Amputations

2. Structural accommodations will maximize accessibility for the wheelchair confined person.
   a. Ramps should be provided which:
      (1) have an incline of 6 degrees or roughly 1-inch rise to 1-foot length.
      (2) are 30 to 40 inches wide
      (3) are equipped with handrails.
   b. Eliminate doorsills.
   c. Doorways should be 32 to 36 inches wide.
   d. Nonskid floors are preferable but carpeting which has even, low, loop pile such as industrial carpeting is acceptable.
   e. Eliminate throw rugs or thick, plush, or uneven carpeting.
   f. Sliding doors, doors with large grasp bars, or lever-type handles are preferable to round door knobs which must be turned for opening.
   g. Elevators must be available for multistory buildings.
   h. Wall switches and elevator control buttons should be 36 inches from the floor.
   i. Electric wall outlets should be 24 inches from the floor.
   j. Counter and work surface heights should be 32 inches from the floor.
   k. Work space should be 57 inches wide to provide for 360 degree turns in wheelchairs.
   l. Counter depth should be approximately 21 inches.
   m. Toe and knee space should be provided under counters and work surfaces.
   n. Telephone height should be 42 inches from the floor.
   o. Bathrooms and restrooms should be equipped with handrails, grab bars, and adequately high toilets to facilitate ease of movement.
   p. Bathrooms and restrooms should be sufficiently wide for movement and turning wheelchairs. (Willard and Spackman, 1978)

3. Assistive equipment can aid worker function. (The following list is by no means exhaustive and reference should be made to the bibliography for books and companies which offer more information.)
   a. Use table-based power tools such as:
      (1) Small jigsaws
      (2) Drill presses
      (3) Portable sewing machines (or adjust the width of bases of cabinet machines)
      (4) Printing presses
      (5) Stand-type electric mixers, blenders, food processors, etc.
      (6) Electric typewriters
      (7) Small computer keyboards or compact computers
   b. Use control extenders:
      (1) Bars or pulleys and weights attached to foot controls
      (2) Longer handles for hand control which are hard to reach or which require much physical strength to operate
   c. Adjust position of controls so they can be manipulated more easily.
      (1) Gas and brake controls in cars
      (2) Sewing machine pedals placed at the arms of wheelchairs or on table tops so that they can be manipulated by arms or elbows

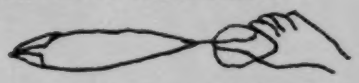
d. To stabilize equipment:
   (1) Set up holders (made from scrap lumber) such as one used to hold a mixing bowl.



   (2) Use high friction rubber mat surfaces such as Dycem mats which prevent sliding of items such as typewriters, tabletop machinery, or mixing bowls.
   (3) Use tape to hold papers for persons having use of only one hand or having dyscoordination in one or both hands.
   (4) Use a spikeboard to hold items - a board with two or three aluminum or stainless steel nails protruding on which food items can be secured for cutting, etc.
   (5) Use vices, jigs, and clamps to position and secure equipment or activities.

e. Use lapboards on wheelchairs to aid in arm positioning and to provide easily accessible work surfaces.

f. Use long-handled reachers for retrieving objects which are too high or too low to reach from wheelchairs.



g. Use chair accessories such as drink holders, ashtrays, and carrying bags.

h. Use wheeled utility carts to carry objects from one point to another. The carts can be:
   (1) Pushed in front of wheelchairs.
   (2) Attached and pulled with wheelchairs.
   (3) Used as assisting walking devices and carriers by those using canes, crutches, or walkers.

i. Use standing boxes or tall stools with backs for those working at high work surfaces which cannot be adjusted (more practical for those having some control of lower extremities).

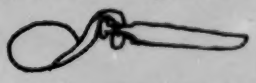
j. Use others' imaginations to develop individual equipment to solve specific problems.
   (1) Instructors
   (2) Students needing adaptations
   (3) Other students in classroom
   (4) Other school personnel

Adaptations and Strategies for Upper Extremity Disorders

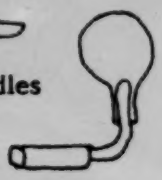
1. Conditions covered in this text which can involve upper extremity disorders are:
   a. Cerebral palsy
   b. Spinal cord injuries
   c. Spina bifida
   d. Congenital physical deformities
   e. Amputations
   f. Juvenile rheumetoid arthritis

2. Strategies
   a. Use principles of joint protection.
      (Quoted from Willard and Spackman, 1978, p. 395)
      (1) "Avoid positions that cause deformity....Encourage the (student) to look carefully at the affected extremities to determine whether or not natural positions are resulting in redness, swelling, or pain."
      (2) Avoid sustained positions (and postures).
         (a) Maintaining a fixed position places stress on specific joints.
         (b) Encourage change (of) position or activities frequently, encouraging the reciprocal muscle movement to stretch tightened muscles and to relieve pressure on the joints.
      (3) Use the strongest joints for heavy work....Teach to compensate for weakened joints and to try to develop bilateral (both sides) capacity.
      (4) Do not start what you cannot stop.
         (a) Create a pace compatible with the disease.
         (b) Instruct the (student) in energy conservation, organization of tasks, and awareness of fatigue.
      (5) Use joints to the greatest mechanical advantage.
         (a) Put the body in the most advantageous position of function.
         (b) Prevent stress on other joints. If the mechanical aspects of different positioning for different activities are analyzed thoroughly...the findings can be valuable....in adapting positions and activities to increase function. Not using the body in a position that utilizes strong muscles and joints effectively may cause strain and even present a safety hazard.
      (6) The (student) must be taught to respect pain. Although one can sometimes detect the signs of pain on someone's face or can learn of pain through the student's complaint, pain itself is highly subjective.
         (a) Tolerance levels of pain vary and, when there is sensory deficit, the perception of pain may be entirely lacking.
         (b) There may be visible inflammation of joints.
         (c) Convey (to the student) that joint protection is for the purpose of improving and maintaining function rather than restricting function.
         (d) Improper use of joints can increase pain.
         (e) Lack of attention to position change and activity change can cause improper use of joints and put undue strain on them.
         (f) Plan activities to maximize function and range of motion.
   b. Use electric rather than manual tools.
      (1) Electric typewriters
      (2) Electric saws, drills, etc.
      (3) Mixers, food processors, meat slicers
      (4) Calculators and small computer terminals
   c. Use partially prepared materials when possible.
      (1) Precut items for assembly
      (2) Mixes and convenience foods
   d. Allow the use of other body parts whenever necessary to function well.
      (1) Teeth
      (2) Feet and toes (sanitation can be equal to that of any other student's hands)
      (3) Legs or arms (especially for holding)
   e. Develop and adapt equipment to aid in control or usefulness to the individual.

3. Equipment
   a. Use aids for communication and writing skills.
      (1) Tape recorders
      (2) Electric typewriters
      (3) Pointing or typing sticks
         (a) Hand-held (if dexterity is poor)
         (b) Mouth pieces (if hand use is minimal; held in mouth to forehead)
         (c) Head sticks (if hand use is minimal; strapped to forehead)
      (4) Communications board and pointer
      (5) Build-up pens or pencils to aid students with poor grasp.
         (a) Use tape wrapped several times around the grip.
         (b) Tape foam rubber around the grip.
         (c) Insert pens or pencils into rubber balls.
   b. Use left-handed equipment whenever appropriate.
   c. Use build-up handles for any tools or instruments which are difficult for students to hold. See preceding 3.a(5).
   d. Work with occupational therapists to develop:
      (1) Bent handles and swivel handles for items which are needed to accommodate deformities or abilities to turn or twist arms or wrists for full functioning.
         (a) Spoons with swivel or hinged bowls to prevent spilling



         (b) Bent handles on ping-pong paddles



      (2) Palmar cuffs or palmar pockets into which utensils or tools can be attached for easier grasp. Use leather, Velcro, elastic, or commercially produced cuffs.

      (3) Splints which help hold hands in useful positions or which have adaptive aids built in.

e. Develop special holders for commonly used position so hand(s) can be free to perform other tasks.
   (1) Special telephone holders
   (2) Cutting boards with spikes and rims
   (3) Vices, clamps, or jigs
   (4) Tape items down
   (5) Rims on edges or at corners
f. Use magnetic tools.
g. Use magnets strapped to wrists ("Magnetic Wrist Hold Down") to help persons with spastic movements or tremors to control their movements.
h. Use tools and equipment with bilateral (both sides) handles instead of only one handle to aid in balance.
i. Use ideas from students and allow each to experiment to find ways of adapting equipment to individual needs.

Strategies for Persons with Terminal Illnesses

1. Condition covered in this text which can involve terminally ill students is:
   a. Cystic fibrosis
2. Strategies
   a. Recognize the stages of a person's attitude toward death -- according to Kubler-Ross (Bigge, 1976) — and be able to accept and work with people in various levels of these stages. Dying students, families, friends, classmates, and associates go through these stages at differing paces.
      (1) Denial - total rejection of the idea of dying. Families frequently seek advice from several sources searching for agreement with their desired responses.
      (2) Anger - the first step toward acceptance. Resentment and anger are often vented "against healthy people who represent those things which the dying person will lose." (Bigge, 1976, p. 100)
      (3) Bargaining - promising to do something in exchange for more time. Bargains are often religiously oriented. This stage indicates recognition of limitation of time.
      (4) Depression - The onset of depression occurs when progression of the illness can no longer be ignored. "Depression may be preparatory for the total loss of everything and everyone (the person) loves. The dying person should be allowed to express this grief and mourning, encouraging completion of this stage more quickly and easily." (Bigge, 1976, p. 100)
      (5) Acceptance - Once adequate time has evolved and assistance given, the reality of death can be accepted. Gradual separation from many relationships occurs and often one confidant is chosen.
   b. Be aware that confidants may be chosen from outside the families and close relations of students. Often trusted adults, like teachers, are those to whom students prefer to talk.
   c. Communication from the student may be:
      (1) Direct, open discussion of feelings and thoughts
      (2) In the form of nonverbal symbols such as artwork
      (3) Verbal symbolism as in questions which lead toward answers sought, but which are indirect, leaving the listener to "read between the lines."
   d. Teachers dealing with terminally ill students need to examine their own feelings about death and possibly come to terms with it themselves.

e. Be open and honest about questions on death and what facts are known about individual cases. Yet at the same time, be sensitive to dying students' or other students' feelings.
f. Be supportive and helpful with "separation from and grief over the losses of family, body image, and self control." (Bigge, 1976, p. 102)
g. Teachers need to "respond to and accept (their) own feelings of anxiety, anger, guilt, and sorrow, and share these, when appropriate, with (students)." (Bigge, 1976, p. 102)
h. Become involved in counseling programs which are available. Medical and mental health personnel can be a valuable resource.
i. Make necessary adaptations for physical limitations which may be present.
j. Set realistic and attainable goals.
   (1) Do not underrate students' abilities or incentives.
   (2) Consider the physical involvement required of students and individualize as much as possible (throughout the class, but especially for special students). Research may be appropriate.
   (3) Consider time perspectively - work from the standpoint of students' need to be useful now, not in the future.
k. Treat students in the same manner as other students. Classroom rules and expectations should be the same for all class members.

Strategies for Health Impaired Persons

1. Conditions covered in this text which involve health impairment are:
   a. Asthma
   b. Convulsive disorders
   c. Heart diseases - congenital, acquired
   d. Hemophilia
   e. Juvenile diabetes
   f. Sickle cell disease
2. Strategies
   a. No special equipment is generally needed for these students because of the disorder unless coupled with orthopedic or multiple handicaps.
   b. Reduce the likelihood of fatigue (which can trigger some attacks).
      (1) Use energy-saving techniques (see **General Strategies**, p. 38, 11.j.)
      (2) Use work simplification techniques (see **General Strategies**, p. 38, 11.k.)
   c. Be aware of symptoms or trouble signs and what is necessary to assist students to return to normal states.
   d. Reduce exposure to threatening conditions.
      (1) Asthma - allergic substances, undue stress
      (2) Heart diseases - fatigue, undue stress, infection
      (3) Hemophilia - excess pressure on joints, cuts, bruises
      (4) Diabetes - imbalance of insulin brought on by changes in diet or exercise
      (5) Sickle cell disease - fatigue, stress, cold, reduction of oxygen intake
   e. Medication may need to be taken during classtime. Be aware of:
      (1) Conditions under which it is needed.
      (2) School or district regulations regarding student administration of medication.

f. Rest after an attack may be necessary.
g. Be cautious of students "using" a disorder to "get their way."
h. Expect each student to obey all classroom rules regardless of condition. Treat all students as equals.
i. Consult school nurses, physical therapists, occupational therapists, parents, or physicians with questions concerning specific students.

3. Convulsive Disorders
   a. Students whose epilepsy is under control and rarely have seizures may need no more special treatment in the classroom than other students.
   b. If safety factors are discussed with the class, students can usually determine what extra precautions may be needed; use their input.
   c. Teachers need to be aware of conditions and the severity of them should quick action be necessary around machinery.
   d. Students whose seizures are not under complete control or who have frequent seizures may need to be limited regarding the types of equipment he/she uses.
   e. Vocational programs should be carefully considered in severe cases before student placement, if safety around machinery or safety working at heights (for masons, carpenters, welders, etc.) could present problems during a seizure.

Annotated Bibliography

Books

Best, G. A. **Individuals with Physical Disabilities: An Introduction for Educators.** St. Louis: Mosby Company, 1978.

Basic discussion of characteristics of disabilities and learning and educational concerns which emphasizes the child.

Bigge, J. L. and P. O'Donnell. **Teaching Individuals with Physical and Multiple Disabilities.** Columbus: Charles E. Merrill Publishing Company, 1976.

A guide and aid to developing curriculum for disabled persons in a task analysis approach. Well defined with numerous examples.

Bleck, E. E., and D. A. Nagal, eds. **Physically Handicapped Children—A Medical Atlas for Teachers.** New York: Grune and Scranton, 1975.

A handbook of medical information relating medical facts and educational implications in lay person's terms.

Bowe, F. **Handicapping America.** Washington, D.C.: American Coalition of Citizens with Disabilities, Inc. (ACCD).

Discusses the barriers people themselves erect and can eliminate, about the attitudes and creations that handicap America by handicapping the disabled.

Calhoun, M. L. and T. Ballowe. "Physical Development and an Introduction to Physical Disabilities." In **Alternatives for Training Through Cooperation.** E.O.L. Jenkins. Rock Hill: Winthrop College, 1979.

The text for training of professionals, paraprofessionals, and parents to develop cooperative programs for the enhancement of special education. Introduces information and background on general development and certain physical disabilities.

Brolin, D. E., and C. J. Kokaska. **Career Education for Handicapped Children and Youth.** Columbus: Charles E. Merrill Publishing Company, 1979.

Written for all persons concerned with the career development of handicapped individuals. Attempts to place career education in the whole curriculum by presenting 22 competencies for different settings (home, school, and community) and four stages of development (awareness, exploration, preparation, and placement and follow-up). Strategies and resources are presented.

Clark, G. M., and W. J. White, eds. **Career Education for the Handicapped: Current Perspectives for Teachers.** Boothwyn: Educational Resources Center, 1980.

A collection of papers discussing educational theories, implementations, and issues regarding career education for the handicapped.

Cookman, H., and M.E. Zimmerman. O.T.R. **Functional Fashions for the Phsyically Handicapped.** New York: Institute for Physical Medicine and Rehabilitation, New York University Medical Center, 1961.

Gearheart, B. R. **Special Education for the 80's.** St. Louis: The C. V. Mosby Company, 1980.

A textbook written for beginning special educators which discusses a variety of handicapping conditions.

Gross, I. H., E. W. Crandall and M. M. Knoll. **Management for Modern Families.**

A textbook guide to principles of managing time, energy, money, and personal resources.

Institute of Rehabilitation Medicine, New York University Medical Center. **Mealtime Manual for the Aged and Handicapped.** New York: Essandess Special Editions, 1970.

Guide to techniques, equipment, and adaptations which are very useful in meal preparation. Contains numerous photographs, recipes, a list of organizations, and a list of sources for tools and equipment.

Michaux, L.A. **The Physically Handicapped and the Community - Some Challenging Breakthroughs.** Springfield: Charles C. Thomas, Publisher, 1970.

Discusses getting along in the community and adjustments which can be made. Author is physically handicapped.

Waldhorn, H. K. **Rehabilitation of the Physically Handicapped Adolescent.** New York: The John Day Company, 1973.

Addresses epilepsy, hemophilia, sickle cell anemia, diabetes, allergies and asthma, and brain injury.

Willard and Spackman's Occupational Therapy. H. L. Hopkins and H. L. Hopkins, eds. 5th ed. Philadelphia: J. B. Lippincott Company, 1978.

Textbook used in the study of orthopedic therapy. Much valuable information. Technically written.

Wright, B. A. **Physical Disability — A Psychological Approach.** New York: Harper and Rowe Publishers, 1960.

Informative and useful discussion of several aspects of adjustment to physical disability. Self-acceptance, social relationships, societal attitudes, training, and rehabilitation are among many subjects addressed.

Books of Interest to Students and Teachers

Blackeslee, M. E. **The Wheelchair Gourmet.** Beaufort, 1981.

Recipes and advice from a "wheelchair gourmet." Focuses on weight control and use of a standard kitchen by a wheelchair-confined person. Organization and adaptation of the kitchen are discussed in a special section. Useful to teacher and student.

Coalition Building. Washington, D. C.: American Coalition of Citizens with Disabilities, Inc. (ACCD).

An account of ACCD's beginning and its first victories. More importantly, it is a record of how disabled people and their representatives came together to effect unprecedented achievements in human and civil rights--and how ACCD sought to support this important work.

Feeling Free. Reading: Addison-Wesley.

Paperback book which introduces students and adults to their disabled peers with short stories, facts, photographs, games, drawings, and activities. A realistic approach.

People....Just Like You: An Activity Guide. Washington, D. C.: President's Committee on Employment of the Handicapped.

A guide suggesting activities such as projects, films, discussions, essays, and books which can be used to introduce to children basic concepts about common problems facing disabled people: attitudinal barriers, architectural obstacles, adaptations to the work place. Activities are coded according to grade level.

Planning Effective Advocacy Programs. Washington, D.C.: American Coalition of Citizens with Disabilities, Inc.

A powerful book telling self-advocates how they can increase local visibility, build coalitions, improve their leadership roles, conduct workshops, work with facilitators, familiarize themselves with the inner workings of local and state government operations, and apply for grants.

Splaver, S. **Your Handicap - Don't Let It Handicap You.** Messner, Julian, 1967.

A personal guide for individuals having difficulties adjusting to handicaps.

The College Guide for Students with Disabilities. Cambridge: ABT Publications.

Directory of higher education options available nationally to students with all types and degrees of disabilities.

Curriculum Materials

Adapting Vocational Education for Handicappers Packet. Mason: Capital Area Career Center.

Materials designed to assist educators in providing vocational training to physically handicapped students.

Puzzled About Teaching Special Needs Students? Madison: University of Michigan.

Descriptions and suggestions for working with a variety of handicapping conditions.

Life-Centered Career Education -- A Competency Based Approach. Reston, Va: Council for Exceptional Children.

Practical curriculum and materials guide that can be used with both handicapped and nonhandicapped students in upper elementary and secondary levels. Behavior objectives, suggested activities, and suggested personnel responsibilities for each of 102 specific competencies are included.

Mainstreaming Guidebook for Vocational Educators. Salt Lake City: Olympus Publishing Company.

A tool for designing and conducting vocational programs in which handicapped persons are expected to achieve success. Includes many strategies, as well as descriptions of conditions, lists of organizations, and a model for developing and reviewing IEPs.

Office of Programs for the Handicapped. **Guidelines for the Implementation of Programs for Pupils Who are Orthopedically Handicapped.** Columbia: South Carolina Department of Education, 1975.

Office of Programs for the Handicapped. **Individually Prescribed Programs of Instruction for Pupils Who are Orthopedically Handicapped.** Columbia: South Carolina Department of Education, 1977.

Office of Vocational Education. **Career Education for the Exceptional Student: South Carolina Career Education-Special Education Resources Manual.** Columbia: South Carolina Department of Education, 1979.

Resource guide for objectives, activities, strategies, and materials for career preparation. Subject areas and developmental age levels are suggested.

Support for the Orthopedically Handicapped Geared to Work. Columbia: South Carolina Department of Education, 1977.

Curriculum material for working with orthopedically handicapped students.

The Vermont Guide for Teaching Adolescents with Special Needs. U.S. Office of Education, United States Department of Health, Education and Welfare, 1975.

General guide to basic competencies in preparation for entry level positions.

Vocational Opportunities. Salt Lake City: Olympus Publishing Company, 1978.

Contains two major sections: one shows the wide variety of jobs at which handicapped people are now employed; the other discusses strategies for overcoming barriers that handicapped people may face in preparing for work, getting a job, and succeeding once they are employed.

Vocational Program for Orthopedically Handicapped. Columbia: Richland County School District One, 1980.

Curriculum guide for establishing and developing a program to develop greater self-reliance and independence in living for students.

Wisconsin Vocational Studies Center. **The CAP Approach to Modifying Vocational Programs for Handicapped Students.** Madison: University of Wisconsin.

1: Agriculture; Vol. 2: Business/Office; Vol. 3: Health; Vol. 4: Home Economics; Vol. 5: Trade and Industry.

Resource Guides

Cooperative Work Experience: An Annotated Resource Guide for Teachers of the Handicapped. Cresaptown: Maryland Vocational Resource Center.

A guide to locating relevant information for teachers of the handicapped in the special area of cooperative work experience.

Gugerty, J., A. F. Roshal, M. D. J. Tradewell, and L. K. Anthony. **Tools, Equipment and Machinery Adapted for Vocational Education and the Employment of Handicapped People.** U.S. Department of Health, Education, and Welfare, Office of Education, Bureau of Occupational and Adult Education, 1981.

A resource catalog which describes and illustrates modified equipment, tools, and machinery, cross-referenced by use and disability. Items are not only commercially developed but some have been developed by individuals to adapt to a particular situation as well. Over 500 items, bibliography, list of manufacturers.

Guidance, Counseling, and Support Services for High School Students with Physical Disabilities. Cambridge: Technical Education Research Center.

Sourcebook on educational, career, and personal counseling services, as well as academic and vocational support services. Listings from purchser's state or from all 50 states available.

Johnson, J. **Career Education for Persons with Handicaps: A Resource Guide.** Columbia: University of Missouri, 1981.

Lists a variety of classroom materials useful for career education programs of handicapped and nonhandicapped students. Appropriate grade levels listed.

Southeast Network for Curriculum Coordination. **Resources for Teachers of the Handicapped in Vocational Education.** Mississippi State University Research and Curriculum Unit for Vocational-Technical Education, 1979.

Curriculum material abstracts listed by general, handicapping condition, and vocational areas.

Booklets and Papers

Handbook of Employment Rights of the Handicapped: Sections 503 and 504 of the Rehabilitation Act of 1973. Washington, D.C.: Regional Rehabilitation Research Institute of Attitudinal, Legal, and Leisure Barriers.

Discusses both hiring and posthiring practices as they relate to recent legislation.

Peterson, L. **Another Step Forward.** Columbus: National Center for Research in Vocational Education.

A series of five instructional booklets designed to help vocational teachers and administrators relate more effectively to handicapped students. Architectural considerations, characteristics of handicapped students, evaluation and placement, mainstreaming, and management systems are the issues addressed.

Audio-Visuals

Bureau of Occupational and Adult Education, The Department of Health, Education and Welfare, U.S. Office of Education. **Working on Working.** Washington. D.C.: National Audiovisual Center.

Shows programs in progress which are preparing handicapped students for the work force.

Expanding Work Options for Exceptional Students — A Facilitator's Kit. Reston, Va.: Council for Exceptional Children.

Contains teacher-oriented in-service materials for encouraging and supporting the career development of exceptional students, K-12. Filmstrip cassette, facilitator's guide, self-instruction manual.

I'M JUST LIKE YOU: Mainstreaming the Handicapped. Sunburst, 1977.

Focuses on the feelings of handicapped students who are integrated into the public schools.

New York University Medical Center, Institute of Rehabilitation Medicine. **Special Children, Special Needs.** Valhalla: Campus Film Distributors Corporation, 1973.

Documentation of three adaptive learning environments for young multihandicapped children — infant settings, preschool learning laboratory, and outdoor therapeutic playground.

New York University Medical Center, Institute of Rehabilitation Medicine. **Special Children, Different Needs....Growing Up Handicapped.** Valhalla: Campus Film Distributors Corporation, 1981.

Follow-up of seven students in the film **Special Children, Special Needs** which, after seven years, compares development and changes in children, parents, and school staff.

Agencies and Organizations

Allergy Foundation of America
801 Second Avenue
New York, New York 10017

American Academy for Cerebral Palsy
1255 New Hampshire Avenue, N. W.
Washington, D. C. 20036

American Association for Health, Physical Education and Recreation
1201 16th Street, N. W.
Washington, D. C. 20036

American Heart Association, Inc.
44 E. 23rd Street
New York, New York 10010

American Occupational Therapy Association
6000 Executive Boulevard, Suite 200
Rockville, Maryland 20852

American Physical Therapy Association
1740 Broadway
New York, New York 10019

Arthritis Foundation
1272 Aveune of the Americas
New York, New York 10036

Association for Sickle Cell Anemia
520 Fifth Avenue
New York, New York 10036

Bureau of Education for the Handicapped
Office of Education
400 Maryland Avenue S.W.
Washington, D. C. 20202

Children's Asthma Research Institute and Hospital at Denver
3437 West 19th Avenue
Denver, Colorado 80204

Children's Blood Foundation
342 Madison Avenue
New York, New York 10017

The Council for Exceptional Children
1920 Association Drive
Reston, Virginia, 22091

Cystic Fibrosis Foundation
3379 Peachtree Road, N.E.
Atlanta, Georgia, 30326

Epilepsy Foundation of America
1828 L. Street, N.W., Suite 406
Washington, D.C. 20036

Fraternity of the Wooden Leg
600 South Oak Street
Sapulpa, Oklahoma 74066

Hemophilia Research
60 E. 42nd Street
New York, New York 10017

Information Center-Recreation for the Handicapped
Outdoor Laboratory
Little Grassy,
Southern Illinois University
Carbondale, Illinois 62901

International Society for Rehabilitation of the Disabled
219 E. 44th Street
New York, New York 10017

Joslin Diabetes Foundation, Inc.
170 Pilgrim Road
Boston, Massachusetts 02215

Juvenile Diabetes Foundation
23 E. 26th Street
New York, New York 10010

Muscular Dystrophy Association of America, Inc.
810 Seventh Avenue
New York, New York 10019

National Amputation Foundation
12-45 150th Street
Whitestone, New York 11357

National Association for the Physically Handicapped
6437 Grandville
Detroit, Michingan 48228

The National Easter Seal Society for Crippled Children and Adults
2023 West Ogden Avenue
Chicago, Illinois 60612

National Epilepsy League, Inc.
203 N. Wabash Avenue, Room 2200
Chicago, Illinois 60601

National Foundation for the March of Dimes
P. O. Box 2000
White Plains, New York 10602

National Hemophilia Foundation
25 West 39th Street
New York, New York 10018

National Paraplegia Foundation
333 North Michigan Avenue
Chicago, Illinois 60601

National Rehabilitation Association
1522 K. Street, N.W.
Washington, D. C. 20005

National Spina Bifida Association of America
P. O. Box 5568
Madison, Wisconsin 53705

Sickle Cell Disease Foundation of Greater New York
144 W. 125th Street
New York, New York 10027

United Cerebral Palsy Association
66 E. 34th Street
New York, New York 10016

U. S. Department of Health, Education, and Welfare
Superintendent of Documents
U. S. Government Printing Office
Washington, D. C. 20402

Manufacturers and Distributors of Adaptive Equipment and Assistive Devices

Abbey Medical Company
600 Normandie Drive
Los Angeles, California 90005

Accent of Living Buyer's Guide
P. O. Box 700
Bloomington, Illinois 61701

Achievement Products
P. O. Box 547
Mineola, New York 11501

Adaptive Therapeutic Systems, Inc.
162 Ridge Road
Madison, Connecticut 06443

Alimed, Inc.
138 Prince Street
Boston, Massachusetts 02113

American Wheelchair Company
5500 Mundy Creek Road
Cincinnati, Ohio 45238

Baily Manufacturing
118 Lee Street
Lodi, Ohio 44254

Care-Chair Systems, Inc.
5602 Elmwood Avenue, Suite 219
Indianapolis, Indiana 46203

Cleo Living Aids
3957 Mayfield Road
Cleveland, Ohio 44121

Childcraft, Exceptional Children's Products
20 Kilmer Road
Edison, New Jersey 08817

Community Playthings
Rifton Line for the Handicapped
Rifton, New York 12471

Convaid Company
P. O. Box 2731
Palos Verdes, California 90274

Developmental Learning Materials
7440 Natchez Avenue
Niles, Indiana 60648

Educational Teaching Aids
159 Kinzie Street, W.
Chicago, Illinois 60610

Equipment Shop
P. O. Box 33
Bedford, Massachusetts 01730

Everest and Jennings, Inc.
1803 Pontuis Avenue
Los Angeles, California 90025

Exceptional Play, Inc.
P. O. Box 1015
Lawrence, Kansas 66044

E-Z Trainer
Box 275
Elkhorn, Wisconsin 53121

Fashionable
Rochy Hill, New Jersey 08553

Foley Manufacturing
3000 Fifth Street, N.E.
Minneapolis, Minnesota 55418

Fred Sammons, Inc. - Be O.K. Self-Help Aids
Box 32
Brookfield, Illinois 60513

G.E. Miller, Inc.
484 S. Broadway
Yonkers, New York 10705

Genac, Inc.
2220 Norwood Avenue
Boulder, Colorado 80302

Guardian Products Company, Inc.
3085 Fleetbrook Drive
Memphis, Tennessee 38116

Gym Closet
2511 Leach Road
Auburn Heights, Michigan 48057

Hausmann Industries, Inc.
130 Union Street
Northvale, New Jersey 07647

Unvacare Corporation
1200 Taylor Street
Elyria, Ohio 44035

Invalex Company
102 Lee Street
Lodi, Ohio 44254

Kaye Products, Inc.
202 S. Elm Street
Durham, North Carolina 27701

Lossing Company
2217 Nicollet Avenue South
Minneapolis, Minnesota 55404

Lumex, Inc.
100 Spence Street
Bay Shore, New York 11706

La Berne Manufacturing Company
P. O. Box 5245
819 Leesburg Road
Columbia, South Carolina 29205

Maddak, Inc.
Pequannok, New Jersey 07440

Mead Creative Products, Inc.
Route 1, Main Street
Clifton Park, New York 12065

Medical Equipment Distributors, Inc.
1215 South Harlem
Forest Park, Illinois 60130

Modular Medicine Corporation
117 88th Street
New York, New York 10028

Motor Development Equipment Company
P. O. Box 4054
Downey, California 90241

Mulholland, L., Associates
1563 Los Angeles Avenue
Ventura, California 93003

Multi-Marketing and Manufacturing, Inc.
P. O. Box 1125
Littleton, Co. 80160

Ortho-Kinetics, Inc.
P. O. Box 436
Waukesha, Wisconsin 53186

Padi's Pedal Power Handi-Cycle
1188 Fischer Boulevard
Toms River, New Jersey 08753

Palmco Engineering Company
12002 Rivera Road
Santa Fe Springs, California 90670

52

Playskool
4501 W. Augusta Boulevard
Chicago, Illinois 60651

Prentke Romich Company
R. D. 2, Box 191
Shrene, Ohio 44676

Preston Corporation
71 Fifth Avenue
New York, New York 10003

Rehabilitation Aids
5931 S. W. Eighth Street
Box 612
Miami, Florida 33100

Rehabilitation Educational Methods, Inc.
P. O. Box 95
Franklin Square, New York 11010

Rehabilitation Equipment, Inc.
1556 Third Avenue
New York, New York 10028

Riswell, Inc.
P. O. Box 73
Greenwich, Connecticutt 06830

Robert C. Adams Company
9528 Shoreland Drive
Bellevue, Washington 98004

Ronson Corporation
1 Ronson Road
Woodbridge, New Jersey 07095

Safety Travel Chairs, Inc.
147 Eady Court
Elyria, Ohio 44035

S.C.M. Corporation
Consumer Products Division
65 Locust Avenue
New Canaan, Connecticut 06840

Skill Development Equipment
Box 6300
1340 North Jefferson
Anaheim, California 92807

Sparr Telephone Arm Company
P. O. Box 143
Allamuch, New York 07820

Summit Services
535 Division Street
Campbell, California 95008

Therapeutic Equipment Services
1060 Broadway, Suite B
Burlington, California 94010

Therapy Equipment Sales Company
P. O. Box 9442
Columbia, South Carolina 29290

Typewriting Institute for the Handicapped
3102 W. Augusta Avenue
Phoenix, Arizona 95021

Sample IEP Short-Term Objectives

Each of the following objectives suggests methods of incorporating adaptations in equipment and, in a few cases, adaptations of standards (time and rate of speed). The objectives are written in observable and measurable terms for the purpose of accuracy and standardization.

1. Using a mechanical reacher and a lapboard, the student will obtain proper tableware, flatware, and glassware; and appropriately set a table for six persons with 100 percent accuracy in five of five trials.

2. Using an adapted foot control which attaches to the arm of a wheelchair and given instruction in basic garment construction techniques, the student will sew a simple garment for his/her use to within 90 percent of the instructor's sample standards.

3. Using a key guard, the student will type a basic business letter at the rate of 30 words per minute with a maximum of two errors per page in five of five trials.

4. Using an electric table saw adjusted to proper height, and a carpenter's ruler, the student will be able to cut wood to specified sizes for simple woodworking projects with 100 percent accuracy.

5. While using a standing frame, the student will be able to operate a cash register with 100 percent accuracy for 20 minutes.

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MENTALLY HANDICAPPED

Description of the Handicapping Condition

What Is Mental Retardation?

Although there are many definitions of mental retardation, the one accepted by most professionals is that offered by the American Association of Mental Deficiency (AAMD). According to the AAMD, a person is mentally retarded when:

1. The individual's measured IQ falls below 70.
2. The individual is unable to meet the standards of personal independence and social responsibility expected of his/her age and cultural group. (Also termed as deficits in adaptive behavior.)
3. The individual's low IQ and deficits in adaptive behavior became obvious before 18 years of age.

Thus, according to the AAMD definition, a person must have **both** a lowered IQ score **and** deficits in adaptive behavior in order to be labeled mentally retarded.

Levels of Mental Retardation

The AAMD sees mentally retarded persons as falling into one of the following four categories.

1. **Mild.** Persons with IQs ranging from about 52 to 69 are usually classified as mildly retarded. This group is the largest and represents about 89 percent of all the individuals classified as retarded. While some of these persons are retarded due to minimal brain damage or other medical problems, many others demonstrate no medical causes, but instead are retarded due to a complex interaction of hereditary and environmental conditions -- called cultural-familial retardation.
2. **Moderate.** Persons with IQs ranging from about 36 to 54 are usually classified as moderately mentally retarded. This group represents about 6 percent of all person classified as retarded. Medical reasons are the major cause of moderate mental retardation although cultural-familial retardation may be a contributing factor.
3. **Severe.** Persons with IQs ranging from about 20 to 39 are usually classified as severely mentally retarded. This group represents about 3.5 percent of all persons classified as retarded. Medical reasons are the usual cause of severe mental retardation.
4. **Profound.** Persons with IQs up to about 24 are usually classified as profoundly mentally retarded. This is the smallest group and represents about 1.5 percent of all retarded persons. The causes of profound mental retardation are definitely due to medical reasons.

Characteristics of Mentally Handicapped Students

The preceding terms of mild, moderate, severe, and profound mental retardation are usually associated with the medical profession. Educators quite often refer to mentally retarded students as mentally handicapped. Schools have traditionally labeled the levels of their mentally handicapped students as educable mentally handicapped (EMH) and trainable mentally handicapped (TMH). It has only been in the last several years that schools have begun to enroll those students who are labeled profoundly mentally handicapped (PMH).

The South Carolina Department of Education defines its mentally handicapped students in the following way.

"Educable mentally handicapped pupils means pupils of legal school age whose intellectual limitations require special classes or specialized educational instruction to make them economically useful and socially adjusted." In order to qualify for enrollment in a program for the educable mentally handicapped, test results and other data must show:

1. An IQ in the range of 50-70;
2. Consistent subnormal performance in all areas;
3. That the educational handicap is not a result of behavioral disorders, or cultural or educational deprivation.

"Trainable mentally handicapped pupils means pupils of legal school age whose mental capacity is below that of those considered educable, yet who may profit by a special type of training to the extent that they may become more nearly self-sufficient and less burdensome to others." In order to qualify for enrollment in a program for the trainable mentally handicapped, test results and other data must show:

1. An IQ in the range of 25-50;
2. Consistent subnormal performance in all areas;
3. That the educational handicap is not a result of adaptive behavior which shows a potential for the development of self-help skills in order to allow for minimal supervision in daily living.

"Profoundly mentally handicapped pupils means pupils of legal school age whose mental capacity is below that of those considered TMH, yet who may profit by a special type of education/training which includes self-help skills, motor development skills, and social and communicative skills in order that they may become more self-sufficient." In order to qualify for enrollment in a program for the profoundly mentally handicapped, test results and other data must show:

1. Intelligence below the range specified for TMH (below 25);
2. Developmental behavior levels which demonstrate profound impairment in all areas evaluated.

What do the mentally handicapped students found in the schools look like? Let's look at each category more closely.

Educable Mentally Handicapped

These students are of average height and weight for their age. Their physical appearance is normal, although there is evidence that in perceptual and motor skills they develop more slowly than do children of normal intelligence. With proper training, however, they can learn many complex motor skills.

The rate of intellectual development of the educable mentally handicapped is one half to three fourths of that of average students. They tend to have problems in dealing with abstract concepts, following directions, developing observational skills, memorizing information, and generaliziang learned skills to other similar situations. Given repeated trials, however, their performance of routine tasks may be comparable to that of the average student.

Academically, the educable mentally handicapped have deficiencies in basic areas such as reading, writing, and math. They also have difficulty communicating their ideas and listening to others. With good educational services, however, they are usually capable of reaching an academic level of between the fourth to the sixth grade.

Because they mature slowly at every stage of their development, the EMH are expected to behave beyond their physical, mental, and emotional capabilities. Academic difficulties tend to increase as they progress in school, and by high school they have usually acquired an ingrained sense of failure. Because of limited reason and judgment, the behavior of the EMH is often inappropriate. They exhibit a greater incidence of emotional and behavioral problems which is probably due to their high degree of stress and frustration.

In adult life, most educable mentally handicapped achieve social and vocational skills to the level that they appear to lose their retarded identification. They may need supervision and guidance, however, under serious social or economic stress. Research has shown that the majority of the EMH are eventually employed in unskilled or semiskilled jobs. (Tobias, 1970; Chaffin, et. al., 1971) Evidence seems to indicate the following:

1. When properly placed, the retarded perform as efficiently as do persons of normal intelligence.
2. On simple or routine tasks, the efficiency of the retarded often exceeds that of nonhandicapped employees.
3. On routine tasks, the retarded show a high degree of job satisfaction and have lower rates of tardiness, absenteeism, and job turnover than do employees of normal intelligence.
4. The failure by the retarded on the job is usually related to personal, social, and interpersonal characteristics rather than to the inability to perform assigned tasks. (Smith, 1978)

Trainable Mentally Handicapped

These students, taken as a group, "look retarded or different." Their individual physical appearances, however, range from the relatively normal appearance of the cultural-familial retarded and some brain injured to the distinctive appearance of the clinical types such as Down's Syndrome, mycrocephaly, or hydrocephalus. Their motor development is fair and they are able to eventually master many of the everyday self-help skills.

The rate of intellectual development of the TMH is one fourth to one half that of average students. They tend to have the same problems as the EMH (dealing with abstract concepts, following directions, developing observational skills, memorizing information, and generalizing learned skills to other similar situations) — only to a much greater extent. In addition, they have a very short attention span and are easily distracted.

Academically, the trainable mentally handicapped experience extreme difficulties in reading, writing, and math. They also have severe problems in communicating their ideas due to speech defects and language deficits. With much concentrated education they are capable of reaching an academic level of between kindergarten and the third grade.

The TMH generally have problems in the social awareness area. This group, taken as a whole, however, probably has not experienced the continual school failure as has the EMH. Trainable mentally handicapped students are usually far removed from the educational mainstream, and are not as aware of their differences from the average students as are the EMH.

In adult life, the trainable mentally handicapped are capable of employment in supervised unskilled occupations, often only in sheltered workshops. This is due, in part, to the lack of intensified, specific skills training they need to gain employment. Socially, they will usually always require some type of supervision, thus being unable to achieve true independent living.

Profoundly Mentally Handicapped

These students are very obviously "special" in their appearance. Generally they also have very poor motor development. Many cannot walk, some cannot sit up alone or even hold their heads up.

The rate of intellectual development of the profoundly mentally handicapped is less than one fourth of that of average students. As a result, they are quite often unable to learn any of the usual academic skills. Their communication is frequently limited to single words, sounds, gestures, or body language. Socially, the PMH are relatively unaware of their environment, except as it relates to their immediate physical needs. In the past, these students were almost always institutionalized with little time or effort given to any training, as they were thought incapable of learning. Today researchers such as Bellamy (1979) and Gold (1980) are demonstrating that some of them are capable of learning complicated assembly tasks in sheltered workshops. Socially, the profoundly mentally handicapped need permanent care from family, friends, or society.

Unique Needs of Retarded Students

NOTE: Although the degree of mental retardation is best represented by a continuum, for the purpose of this section, it will be assumed that all retarded students fit neatly into one of the three categories: EMH, TMH, or PMH. It will also be assumed that the students in each category are homogeneous in regard to their unique needs and strategies for meeting these needs. This is done only for organization. Please remember, however, that students within each category, while sharing some general characteristics, are still individuals with their own unique strengths, weaknesses, and needs.

Needs of the Educable Mentally Handicapped

First and foremost, EMH students need to experience success. Previous school failures have depressed their levels of self-confidence and students may have even acquired an ingrained sense of failure. When teaching is done in very small sequential steps and when students are given enough time and practice to master each step, success will occur.

Regular classroom instruction may have to be altered somewhat for EMH students. Many of these students do not profit by large group instruction due to their difficulties in understanding directions, dealing with abstract concepts, developing observational skills, and transferring learned skills to other similar situations. They are most effectively instructed in a small group setting where progress can be continually monitored and they can receive frequent feedback.

As EMH students are functioning significantly below grade level in the academic skills of reading, writing, and math, they need to have special aids provided such as taped books, oral tests, or calculators.

Teacher expectations of student behavior need to be specifically outlined to the students as many EMH exhibit inappropriate behaviors due to limited reason and judgment and to lowered frustration tolerance.

Needs of the Trainable Mentally Handicapped

As these students are more severly retarded than the EMH students, merely meeting the above needs may not be sufficient to insure student success. TMH students are rarely able to function in regular vocational classes in a mainstreamed setting; rather, the unique needs of these students are better met in separate specially designed classes. Curriculum goals and course content need to be abbreviated and adapted. Teaching techniques need to be employed that minimize these students' short attention spans and high levels of distraction. These students are typically unable to judge the quality of the work completed and desire constant reassurance. Highly structured procedures for student self-evaluation need to be set up.

Needs of the Profoundly Mentally Handicapped

In the past, vocational educators have rarely been asked to work with students of this level of retardation. In fact, teenage students functioning on this level have typically been housed in separate centers or elementary schools. Now that researchers are reporting progress in training some of these students in complicated assembly tasks, vocational educators may begin to become involved with the PMH.

PMH students also need to experience success in being able to complete vocational tasks upon demand. As these students have poor motor development and very limited communication skills, teachers need to develop new ways of teaching skills and communicating with students.

Strategies for Meeting These Unique Needs

Individual Educational Program (IEP) Process

According to P.L. 94-482, vocational programs for handicapped students must conform to each student's IEP. For this reason, vocational educators have now become a part of the IEP team.

The IEP begins with listing the handicapped student's strengths and weaknesses. This is the place for vocational educators to ensure that the factors necessary to improve the student's potential for employment are considered. Next comes the development of explicit and realistic annual goals and short-term objectives. Here there must be a vocational component written into the IEP. Finally, specific information must be included on the instruction, curriculum, equipment modifications, and suppot services needed to meet the stated goals.

If mentally handicapped students are to be placed in your class, try to attend the IEP conferences. Ask for the conferences to be scheduled during your planning period or arrange to have someone cover your class so that you will be able to attend. Once at the conference, you will be asked for input into the various IEP components. If you have been able to do any prior vocational assessment of the student, use that as a basis for your contributions. Otherwise, ask team members familiar with the student about his/her strengths and weaknesses as they relate to your particular area; then build goals from that point.

Some sample vocational goals that might be written for mentally handicapped students in vocational classes are as follows:

- Annual goal: The student will demonstrate the skills necessary for employment as a service station attendant.
- Short-term objective: Given an automobile, a wrench, a container for used oil, the new oil, and a pour spout, the student will change the oil in the crankcase within 45 minutes -- done to the satisfaction of the teacher.
- Annual goal: The student will demonstrate those personal characteristics necessary to obtain and hold employment.
- Short-term objective: The student will refrain from asking for reinforcement regarding the quality/quantity of his/her work once he/she has demonstrated the ability to perform the task successfully, as observed over a four-week period.

General Strategies

Research (as reported in Brolin, 1976) indicates that the retarded are capable of learning more than we often think. Success depends upon such factors as using meaningful materials, training to attend to stimuli, building in areas they failed to learn incidentally in the early years, and teaching by distributing material over a period of time rather than trying to teach it all at once.

Baumeister (1967) identifies the following as important learning characteristics of the mentally retarded.

1. The learning deficiencies of mildly and moderately retarded persons are task specific or related to only certain aspects of the learning situation.
2. Under certain conditions their learning and retention are quite adequte and comparable to normals.
3. Rote memory is often difficult to achieve.
4. Meaningfulness of the material to be learned is important.
5. Learning is facilitated if students are required to name the learning stimulus before responding.
6. When verbal learning material is familiar and concrete, the retarded do as well as normals.
7. Overlearning material apparently benefits the student's retention.
8. Discrimination learning tasks (identifying similarities and differences) are difficult for the retarded.
9. Previous experience in discrimination learning situations is an important factor related to the rate of learning.
10. Prolonged failure experience affects the ability to solve problems whose solutions were formerly possible.
11. The retarded have a "generalized expectancy to fail" which is associated with an unnecessarily low initial level of performance.
12. Motor learning is most appropriate, and with proper training methods moderately retarded individuals can learn many complex and intricate motor skills.

Thus, by keeping the above factors in mind and by utilizing a step-by-step procedure which minimizes failure and is designed according to the individual's speed and learning style, success can be achieved beyond that which is typically thought possible with most of the mentally retarded.

Strategies for Teaching EMH Students

The most vital factor in working with EMH students is time allowance. Allow students enough time to master one step before going on to the next step. Consider allowing two years for the completion of a typical one-year course, or eliminating whole areas of course study to be taught in one semester or year. Be sure that the instruction of any skill is broken down into its component steps. Teach each step separately, but in sequence.

In the actual instruction, utilize the following strategies.

1. Teach everything you expect the students to know. Never take it for granted that they already know something.
2. Be careful in giving directions. Keep them as short and as simple as possible. Have students repeat the directions to you to check for accuracy. Write down the oral directions, give them to the students, and have them check their work for accuracy in following the directions.
3. Whenever possible, let students manipulate concrete objects and involve as many senses as possible. Be wary of the overuse of abstract concepts.

4. Do not assume that students can transfer learning of procedure under one set of conditions to another set of conditions. Practice under various sets of conditions.
5. Help students develop their observational skills. Request that they describe what they are seeing.
6. Utilize peer tutoring. Pair an EMH student with another student of normal intelligence. Consider pairing one EMH student with another EMH student who has mastered the task at hand. Remember, a good method of overlearning is to tutor others.
7. For students with significantly depressed academic skills, use taped materials, give oral tests, and let students tape record reports.

Do not tolerate inappropriate behavior from EMH students. Tell them exactly what behaviors you expect in your class and follow through consistently. Do not excuse any inappropriate behaviors merely because students are retarded. Remember, many of the inappropriate behaviors merely reflect limited reason and judgment.

Given enough time and a structured setting, EMH students can usually master set course objectives.

Strategies for Teaching TMH Students

In all likelihood these students will be unable to master your set course objectives, even by following all the guidelines stated above. With these students, it will be necessary to have fewer and narrower course objectives. For instance, instead of the objective to measure, cut, erect, and nail wall framing, perhaps the objective of cutting lumber on the designated line might be substituted. Think of training TMH students to be "helpers" -- as opposed to full-fledged artisans.

Be sure to keep all objectives and curriculum on a very practical level. Since these students have the time and ability to learn only a limited number of objectives, make sure that lessons are ones that will be usable in adult life. For instance, instead of having the students, with constant teacher supervision, make a cake "from scratch," let them become proficient in independently making a cake using a cake mix.

In the actual instruction, keep the activities very short and increase student participation. Instead of having students merely watch a demonstration, use physical prompting to guide their hands in order that they can successfully carry out the tasks. As with EMH students, break down all tasks into very small successive steps and teach each step in sequence.

As TMH students tend to be very dependent, self-reliance might be taught. Instruct the students to evaluate their work -- such as stooping down and looking into the light to see any missed spots on a freshly wiped table. Do not praise students for every successful task; instead ask them if the tasks were successful. Although sincere praise does tend to build self-confidence, it can be overdone and instead increase dependency.

As with EMH students, do not tolerate any inappropriate behaviors. With TMH students, however, the appropriate behavior may actually have to be taught. Role playing is a very useful technique for learning appropriate behaviors. If TMH students demonstrate inappropriate behaviors while grocery shopping, teach the appropriate behavior before the next shopping trip. (Or better yet, teach the appropriate behaviors for grocery shopping before the first shopping trip.) As an example, set the classroom up as a supermarket with the teacher as the checker. Tell the student how to behave and let each one practice in this simulated setting.

Strategies for Teaching PMH Students

Do not be discouraged with the concept of teaching the profoundly mentally handicapped, as the research of Gold (1980) and Bellamy (1979) has shown that the PMH can indeed learn complicated assembly tasks. To reach these tasks, it is necessary to utilize a very structured management approach. After breaking the task down into very small steps, each step is taught, and assistance is given to insure successful completion. As students progress, less assistance is given until they are able to carry out the step alone.

In order to encourage students to repeat the step, some sort of reinforcement (reward) is given after each successful completion of the step. Initially, these reinforcements are usually food or drink, but later in the training they could be tokens (redeemable for some desired object or consequence) or even merely praise.

For instance, in teaching PMH students to count out five screws to be bagged, the general procedure might be as follows. Students are taught to put one screw into each of the five holes in the counting jig, remove the screws and place all of them in a bag, and staple the bag shut. All assistance needed to insure success is given. With each successful step, each student is given a raisin, a token, a pat on the shoulder, and verbal praise. Less assistance is given with each successive training period until eventually each student is able to bag the screws alone. A token might be given at the completion of each bagging. At the end of the session, a stack of tokens a certain height might be redeemable for a soft drink or the privilege of turning on and listening to the radio for two minutes.

Annotated Bibliography

Exemplary Programs

Ashby, S., and G. J. Bensberg. **Cooperative Occupational Preparation of the Handicapped: Exemplary Programs.** Lubbock, Texas: Texas Tech University, Research and Training Center in Mental Retardation, 1981.

Presents 13 national exemplary vocational programs, including the one in York School District 1, South Carolina.

(NOTE: For other local programs, consult the vocational special needs consultant at the South Carolina Department of Education.)

Reference Materials

Albright, L., J. Fabac and R. N. Evans. **A System of Identification, Assessment and Evaluation of the Special Needs Learner in Vocational Education.** Urbana-Champaign, Ill.: University of Illinois, Bureau of Educational Research.

A nine-part series ranging from identifying students with special needs, assessing the students' present levels of performance and preparing individualized vocational plans to assessing progress and conducting follow-ups.

Baumeister, A. A., ed. **Mental Retardation: Appraisal, Education, Rehabilitation.** Chicago: Aldine, 1967.

A compilation of research in mental retardation.

Bellamy, G. T., R. H. Horner and D. P. Inman. **Vocational Rehabilitation of Severely Retarded Adults.** Baltimore: University Park Press, 1979.

Presents procedural guidelines for task design and analysis, vocational training, and production supervision for severely retarded adults.

Brolin, D. E. **Vocational Preparation of Retarded Citizens.** Columbus, Ohio: Charles E. Merrill, 1976.

A comprehensive textbook covering basic background of mental retardation, techniques of vocational preparation, and program models and evaluation.

Brolin, D. E. **Life-Centered Career Education: A Competency-Based Approach.** Reston, Va.: Council for Exceptional Children, 1978.

A curriculum, designed primarily for EMH students, which begins by looking at the desired outcomes of school experiences, then analyzes these outcomes into their component competencies, and finally presents instructional activities.

Brolin, D. E., D. J. McKay, and L. L. West. **Trainer's Guide to Life-Centered Career Education.** Reston, Va.: Council for Exceptional Children, 1978.

Designed to help administrators initiate a career-infused educational program for handicapped students in the secondary schools.

Chaffin, J. D., C. R. Spellman, C. E. Regan and R. Davison. Two follow-up studies of former educable mentally retarded students from the Kansas Work-Study Project. **Exceptional Children**, Vol. 37, No. 10, (1971).

A follow-up study of former students reports an 83 percent employment rate.

Davis, S., and M. Ward. **Vocational Education of Handicapped Students: A Guide for Policy Development.** Reston, Va.: The Council for Exceptional Children.

Presentation of policy areas oriented toward identifying and serving handicapped students and with managing the programs and providing appropriate resources.

Dietrich, D. "Vocational Mainstreaming for EMR Students," **Career Development for Exceptional Individuals**, Vol. 3, No. 2 (1980), 101-108.

Report of a study comparing the ratings in 15 areas of work adjustment of EMR students to nonretarded students in vocational education classes.

Dunn, L. M., ed. **Exceptional Children in the Schools: Special Education in Transition.** New York: Holt, Rinehart & Winston, 1973.

A textbook describing characteristics and educational programming of children of nine different exceptionalities.

Gold, M. W. **Try Another Way Training Manual.** Champaign, Ill.: Research Press, 1980.

Based on the premise that one can best serve handicapped persons by training them to do marketable tasks; offers options in training the severely handicapped.

Horn, F. M., and A. O. Barsness. **Annotated Bibliography of Instructional Materials for Use by Home Economics Teachers with Educable Mentally Retarded Students.** Stevens Point, Wisconsin: University of Wisconsin, 1975.

A listing of 143 resources covering every area of home economics for use with the EMH student.

Horn, F. M., and A. D. Barsness. **Instructional Materials for Use with EMR Students Enrolled in Home Economics Classes.** Stevens Point, Wisconsin: University of Wisconsin, 1975.

Actual lessons, drawings, and study sheets designed for all areas in home economics education.

Johnson, C. M. **Preparing Handicapped Students for Work: Alternatives for Secondary Programming.** Reston, Va.: Council for Exceptional Children, 1980.

A monograph examining the myriad of issues that affect secondary programs for exceptional students, and offering a number of recommendations to assist in program planning.

Industrial Education and the Special Needs Learner. **School Shop**, Vol. 37, No. 8.

A special issue (April 1978) devoted to programming for special needs learners. Some of the topics addressed: teaching the EMR student, using support services, training personnel, mainstreaming, etc.

Maryland Vocational Curriculum Research and Development Center. **Vocational Curriculum Resources for Handicapped Students: A Guide to Print and Nonprint Instructional Materials.** College Park, Md.: University of Maryland, 1979.

A listing of about 200 resources with the heaviest emphasis on food industries, home economics/needle trades, and life skills/consumer education.

Patton, P. L. A Model for Developing Vocational Objectives in the IEP. **Exceptional Children**, Vol. 47, No. 8 (1981), 618-622.

Discusses writing objectives after evaluation with the McCarron-Dial Work Evaluation System (MDWES).

Rusch, F. R., and D. E. Mithaug. **Vocational Training for Mentally Retarded Adults: A Behavior Analytic Approach.** Champaign, Ill.: Research Press, 1980.

Discusses behavior training and management, evaluation of progress, placement, and follow-up.

Sitlington, P. L. "The Assessment Process as a Component of Career Education," in **Career Education for the Handicapped: Current Perspectives for Teachers.** Eds. G. Clark and W. White. Boothwyn, Pa.: Educational Resources Center, 1980.

Discusses types of data to be collected and assessment techniques.

Sitlington, P. L. "Vocational and Special Education in Career Programming for the Mildly Handicapped Adolescent," **Exceptional Children**, Vol. 47, No. 8 (1981), 592-598.

A general overview article discussing the issues of special education's role in career programming, vocational education as a discipline, and programming options.

Smith, C. "Students with Mental Retardation," **Vocational Education: Teaching the Handicapped in Regular Class.** Ed. R. Weisgerber. Reston, Va.: Council for Exceptional Children, 1978.

Describes the educator, the student, and the task and discusses establishing and carrying out a plan for individual instruction.

Special Learning Corporation. **Readings in Vocational Training for the Mentally Retarded.** Guilford, Conn., 1979.

A compilation of 42 articles originally published in periodicals, seminar proceedings, etc.

Tobias, J. "Vocational Adjustment of Young Retarded Adults," **Mental Retardation**, Vol. 8, No. 3 (1970), 13-16.

A follow-up study of students who were in special classes for the retarded in New York City reports that 60 percent of the males were currently employed.

Wehman, Paul. **Competitive Employment: New Horizons for Severely Disabled Individuals.** Baltimore: Paul H. Brooks, 1981.

Includes sections on training, placement, job retention, and model programs in preparing for competitive employment.

Financial Resources

(NOTE: These sources are to be considered in addition to the usual state and federal funding sources.)

Association for Retarded Citizens
2501 Avenue J
Arlington, Texas 76001
(817) 640-0204

Provides funds to employers for a limited time of on-the-job training.

Civitan Club
(Check your local telephone directory for a contact.)

Raises money for support of programs for the retarded.

Knights of Columbus
(Check your local telephone directory for a contact.)

Raises money for support of programs for the retarded.

Many other local civic groups, women's clubs, fraternal groups, churches, businesses, and even individuals are willing to donate money to programs for retarded students.

Human and Agency Resources

(NOTE: Names of individuals will not be listed here due to frequent personnel changes.)

Clearinghouse on the Handicapped
Office of Information and Resources for the Handicapped
Room 3106, Switzer Building
Washington, D. C. 20202
(202) 245-0080

Compiles annotated list of publications on mental retardation available from federal agencies. Request a free catalog.

Council for Exceptional Children
1920 Association Drive
Reston, Va. 22091
(800) 336-3728

A professional organization to advance the education of exceptional children. Has a Division on Mental Retardation and a Division on Career Development. (Call CEC for the names of local contact persons.) Also publishes books and maintains two data bases: ERIC (Educational Resources Information Center) and ECER (Exceptional Child Education Resources).

Job Service
(Check your local telephone directory for a contact.)

In addition to being a resource, also has a variety of pamphlets and will save outdated Job Bank computer printouts.

Materials Development Center
Stout Vocational Rehabilitation Institute
School of Education and Human Services
University of Wisconsin-Stout
Menomonie, Wisconsin 54751
(715) 232-1342

National central source for the collection, development, and dissemination of information and materials on work evaluation and adjustment. Much of this material relates to mental retardation.

South Carolina Department of Education
Programs for the Handicapped
Rutledge Building
Columbia, South Carolina 29201
(803) 758-7432

Consultant available for each area of handicapping.

South Carolina Vocational Rehabilitation Department
(Check local phone directory for a contact.)

In addition to being a resource, VR counselors can declare clients handicapped workers who then may be paid at half of minimum wage for at least 90 days in an on-the-job training program.

University of South Carolina
Program for Exceptional Children
Columbia, South Carolina 29208
(803) 777-8195

Department staff willing to do community service work in the schools.

Wisconsin Vocational Studies Center
University of Wisconsin-Madison
964 Educational Sciences Building
Madison, Wisconsin 53706

A wide variety of excellent A-V, curriculum, and other materials are available for sale from this center.

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VISUALLY HANDICAPPED

Description of Visual Handicaps

Being visually impaired can affect students' life styles, study habits, mobility, and, most profoundly, interpersonal relationships.

A vocational teacher or a counselor's relationship with visually handicapped students may depend on the professional's knowledge of visual impairments and on the extent of the student's visual abilities. Visual impairments have many causes, and degrees of sight loss vary greatly from person to person.

The following is a general definition of a visual handicap. Visually handicapped pupils are of legal school age who either have no vision or whose visual limitations after correction result in educational handicaps unless special provisions are made.

Definitions of Specific Visual Impairments

Visually impaired:
Persons are said to be "visually impaired" if they are either functionally blind or partially sighted. The term "blind" is usually used only for those people who have a complete loss of sight.

Functionally blind:
Persons are said to be "functionally blind" if the vision in the better eye, even with the help of corrective lenses, is either absent or consists only of light projection. Total blindness (absence of any light perception at all) is relatively rare.

Legally blind:
"Legally blind" persons are those whose vision in the better eye, even with the help of corrective lenses, is no better than 20/200 or their maximum visual field is less than 20 degrees. "Legally blind" is a term used to define people who are eligible for government-funded services, but may be confusing because one "legally blind" person may have a great deal of residual sight and another may be totally blind.

Partially sighted:
Persons who are "partially sighted" find that the vision in their better eye, even with the help of corrective lenses, is no better than 20/70, but is better than light perception or light projection. People are also called partially sighted if the maximum diameter of their visual field is less than 20 degrees.

Fully Sighted:
Persons who are "fully sighted" are those who are not visually impaired.

Other Visual Impairments

Refraction impairments:
Impairments caused by errors of refraction in the eye's lens affect central visual acuity. They are usually corrected with glasses or contact lenses.

Astigmatism:
Blurred vision caused by defective curvature of the lens of the eye, as a result of which light rays are not sharply focused on the retina.

Hyperopia (Farsightedness):
A condition in which the eyeball is too short from front to back. Light rays from objects will be "in focus" behind, rather than on, the retina.

Myopia (Nearsightedness):
A condition in which the eyeball is too long from front to back. Light rays from objects will be "in focus" in front of, rather than on, the retina.

Common Causes of Serious Visual Impairments

Cataracts:
A condition in which the normally transparent lens of the eye becomes cloudy or opaque, causing blurred vision. Cataracts can sometimes be present at birth; these are known as congenital cataracts. Some cataracts are correctable by surgery.

Glaucoma:
A condition in which pressure of the fluid inside the eye is too high. Depending upon the type of glaucoma, visual loss may be gradual, sudden, or present at birth. When visual loss is gradual, it begins with decreasing peripheral vision.

Diabetic Retinopathy:
A condition resulting from interference of the blood supply to the retina. A direct result of diabetes.

The below impairments are caused by either prenatal diseases of the mother, hereditary disorders, or are congenital with unknown causes.

Albinism:
A hereditary condition in which there is a lack of pigment throughout the body, including the eyes. It is usually accompanied by a nystagmus condition. Children with albinism are very sensitive to light and sometimes wear tinted glasses.

Coloboma:
A congenital condition -- a degenerative disease wherein the central and/or peripheral areas of the retina are not completely formed.

Retinitis Pigmentosa:
A hereditary degeneration of the retina beginning with night blindness and producing a gradual loss of peripheral vision. Though some persons with this disease lose all of their vision, many do retain some central vision.

Others:
Congenital cataracts, sometimes glaucoma, and infectious prenatal diseases of the mother such as syphilis and rubella are included in this group.

Improper Muscle Function Impairments

Nystagmus:
Involuntary, rapid movement of the eyeballs from side to side, up and down, in a rotary motion, or a combination of these.

Strabismus:
A condition in which the eyes are not simultaneously directed to the same object as a result of an imbalance of the muscles of the eyeball. The eyes are directed either inward (crossed eyes) or outward.

Other Impairments

Retrolental fibroplasia (R.L.F.):
Visual impairment which results in scar tissue forming behind the lens of the eye. Caused by an excessive concentration of oxygen given to incubated premature babies.

Clues — Ways to Recognize Visual Impairments

Complaints:
1. Cannot see well or has blurred vision
2. Letters or lines "run together" or jump
3. Headaches, dizziness and tiredness, or even nausea following close eye work
4. Double vision
5. Eyes itch, burn, smart, or feel scratchy
6. Cannot see blackboard

Appearances:
1. Lids red-rimmed, encrusted, or swollen
2. Recurring styes
3. Inflamed or watery eyes
4. Crossed eyes
5. Pupils unequal in size or shape

Behaviors:
1. Has difficulty in reading or in work requiring close vision
2. Skips words or lines, re-reads, loses place, or reads too slowly
3. Frowns, blinks excessively, scowls, squints, or uses other facial distortions in reading.
4. Holds books and objects too close
5. Avoids close work whenever possible
6. Rubs eyes frequently, or attempts to brush away the blur
7. Shuts or covers one eye, tilts, or thrusts head forward when looking at objects
8. Has general fatigue, drowsiness, or irritability after prolonged use of eyes in reading or doing close work
9. Stumbles or trips over small objects
10. Does not do well in games requiring distant vision
11. May be unduly sensitive to light, and poor in color detection
12. Fails in school work that requires reading or visual acuity (i.e., typing)

It must be recognized that many of these signs and symptoms occur transiently during "colds" and other illnesses, but any persistence of these complaints indicates the need for an eye examination.

Causes of Visual Losses

Visual losses have many causes, including heredity, congenital problems, inflammatory or degenerative disorders, tumors, or metabolic conditions. Major kinds of visual conditions are albinism (deficiency in eye pigment), diabetes, glaucoma (elevated ocular pressure), hyperopia (farsightedness) or myopia (nearsightedness), retinitis pigmentosa (night blindness combined with limited visual field). Furthermore, vision usually declines with age. In addition to different causes, people react differently to visual losses. There are differences between newly blinded students and those who are congenitally blind (blind since birth). For example, newly blinded students may still be dealing with the emotional reaction to vision loss.

Numbers of Visually Impaired Persons

Altogether, more than ninety million Americans have some kind of visual dysfunction--that is, less than normal eyesight. The American Federation for the Blind estimates that over 3.5 million Americans have some kind of "visual impairment." An estimated one million impaired people lack the vision necessary to read newsprint and, of this group, 430,000 are legally blind. With the increasing number of older Americans, more than 47 percent of the legally blind are aged 65 or over.

Problems

People who have a visual impairment may have other disabilities as well. These other disabilities may further impede mobility, learning styles, and interpersonal relationships. The degree and extent of special help needed by students with multiple handicaps varies greatly with each individual, and is best assessed on an individual basis.

Blindness frequently creates barriers between people and their environments. Visually impaired persons may face limited mobility and experiences in their daily lives. Blinded individuals may be dependent on other people or mechanical devices. Blindness also has a major impact on careers and vocational training plans; the reactions of individuals to their blindness also have profound effects on those plans.

Services Available

Surprisingly, less than 5 percent of the blind population uses guide dogs. Approximately the same percentage reads braille. Mechanical aids and adapted materials are the most common aids for the visually impaired. Legally blind students can receive free use of recording equipment and special devices funded by the federal government. Furthermore, there are numerous services and appliances provided for visually impaired students by state agencies and national associations. Many visually impaired students do not seek assistance, however, and hide their handicapping conditions as best as they can. They never notify teachers or resource center personnel of special needs until they run into academic trouble in the middle of the term.

Barriers Facing the Visually Impaired

According to Frank Bowe and others (1978), there are six major barriers that face the visually impaired as well as other handicapped individuals.

1. Architectural (mobility/transportation)
2. Attitudinal
3. Educational
4. Occupational
5. Legal
6. Personal

The architectural (or mobility) barrier can be one of the most significant. Curbs, stairways, or slippery walks may be major obstacles to newly blinded persons or congenitally blind persons who have not mastered a mobility training program. Guide dogs, if they are used, are of little value for blind travelers who have not already learned independent travel skills. Those visually impaired students who are afraid of obstacles and are uncertain about their ability to move from one place to another may develop an abnormal posture. They may lean too far forward or bend at the waist to brace themselves against possible injuries. To counteract these and other "blind mannerisms," visually impaired students take special training in mobility and orientation. Mobility training involves mental and sensory orientation to the environment and to physical movement. With mobility training, fear of the environment can be minimized if blind students are encouraged to touch, smell, and hear things that are usually seen by others.

Unique Needs of Visually Handicapped Students

Visually impaired students being mainstreamed into vocational education have the same social, emotional, and personality development goals as normally sighted peers, but they may need special emphasis on certain phases of these basic developmental areas. They may need to develop positive attributes, talents, and abilities more adequately. They may need extra emphasis on self-organization with regard to study skills, encouragement in self-acceptance, and self-expression. Visually impaired students may need assistance in becoming accepted members of the social group, but with the use of different materials, will be educated much the same as normally sighted students. The intelligence of visually impaired students does not deviate substantially from that of sighted students because many can use glasses to improve sight. Residential schools are available, in addition to tax-funded programs for education and training.

Types of Classes for the Visually Impaired

Full-Time Special Class:
A specially staffed and equipped room in which blind and/or partially sighted students receive three fourths or more of their formal instruction.

Cooperative Special Class:
A specially staffed and equipped room in which visually impaired students receive less than three fourths of their formal instruction from a special teacher and the rest in regular classrooms.

Resource Room:
A specially staffed and equipped room to which students enrolled in regular classrooms come at scheduled times or as the need arises.

Itinerate Teachers:
A plan in which visually handicapped students are enrolled in regular classrooms, but receive special instruction from itinerate teachers who travel among two or more schools to work with such students.

Mainstreaming:
This could involve any combination of the last three above. Students would be in regular classrooms, but would receive help from any or all of these.

Classroom Settings

1. Arrange seating so that students do not suffer fatigue by having to face the light.
2. Eliminate glare -- avoid highly polished surfaces, glass-covered pictures.
3. Teachers should never stand with their backs to the light source (particularly windows) because it is difficult for students to see when facing glare.
4. Seats should provide maximum comfort so that students are positioned in the seats so that materials are at eye level.
5. Tilt-top desks are recommended.
6. Lighting should be a minimum of 40 foot candles.

General Provisions for Students

1. Glasses should be kept clean and properly adjusted.
2. Rest periods for eyes should be provided by varying activities.
3. Stress an oral approach whenever possible.
4. Alternate hands-on activities.
5. Provide creative or free-hand work between activities that require extensive eye work.
6. Emphasize writing that is large and clear.
7. Students with limited vision should be trained to be "ear-minded" rather than "eye-minded." Where possible, substitute manual and auditory experiences for visual tasks.
8. Books with large-sized print are recommended, as they are much less tiring than books with regular-sized print.
9. Typing is a tremedous help to many visually impaired; typing instruction may be begun around the fourth grade or when motor development allows.
10. Tape recorders are invaluable in teaching listening skills, recording (rather than writing reports), and recording directions.
11. Determine the students' most effective learning modes--lectures, tactile demonstrations, peer teaching, etc.
12. Determine the students' most effective reading preference--braille, large print, tape recordings, etc.
13. Determine students' mobility in a classroom or work station.

Assessments may take place in classrooms, learning centers, counselors' offices, or other locations. These assessments may involve actual tasks that are part of the vocational course, or basic skills that entering students will need.

It is possible that partially sighted or blind students who enter vocational training may need additional training in prevocational skills such as hygiene, posture, or eating. This prevocational work could be conducted by a community or state agency, high school, or post-secondary school. According to the department head of one vocational school, grooming continues to be a problem for many visually impaired students. (George Sippl, Milwaukee Area Technical College) Independence should be fostered in these students, but it is important to bring poor grooming habits to their attention.

Prevocational experiences may also involve exploring various career options. Exploration could include mini-courses or assessment tests in vocational schools where students are exposed briefly to various curricula and have an opportunity to test themselves in the skills required in such programs.

Vocational teachers who work with visually impaired students list the following skills as important for success in vocational training programs.

1. Orientation and mobility
2. Effective listening
3. Typing, braille-reading, and writing
4. Maximizing residual vision skills of partially sighted students

Students who lack the above skills may need additional assistance or instruction from resource teachers or aides.

Strategies for Teaching the Visually Impaired

Once the needs and abilities of students have been assessed, planning ahead for any modifications is the most important factor in creating successful vocational programs. Ideally, planning for (and with) the students can be done before the first day of class. Modified teaching strategies could require the preparation of special materials, tapes, or charts that may take some lead time. Even modifications that do not require special preparation may work best when planned ahead of time with students, then revised as needed. Adequate planning time allows teachers to meet with resource teachers or other teachers of visually impaired students, and to examine other modifications that have been developed for these students.

When developing modifications, teachers' attitudes toward visually impaired students are critical. A lack of knowledge about blindness may cause uncertainty or fear for the safety of the students. Safety is always important in the classroom and laboratory, but it is also important not to exclude visually impaired students from activities solely because of blindness. It is important to check first with each student to determine his/her ability to participate in the activity--either with other students or in a modified form. Frequently, classmates or "buddies" can be assigned to assist visually impaired students during special projects or field trips.

Once the needs of visually impaired students are identified, course modifications begin with an examination of course objectives and materials. It is necessary to review the curriculum and identify areas that may present barriers to visually impaired students. Teachers will need to evaluate lessons according to some general selection criteria such as:

1. usefulness
2. effectiveness
3. difficulty
4. applicability to future job skills

In planning any modifications, methods of learning should be selected that will be most appropriate for both the curriculum and all students--including those who have visual impairments. Some methods include:

1. audio-visual materials
2. prepackaged learning systems
3. learning circles, small groups
4. individualized learning systems

Selecting the best method may require trial and error.

Other effective teaching strategies include team teaching and the use of resource people who can suggest new perspectives and alternate teaching styles. Other strategies include the development of interdisciplinary or skill-building courses. Students who anticipate problems may be encouraged to enroll in other skill-building courses, especially in reading, spelling, and mathematics. The use of modules or small mini lessons that cover one task or skill area may also assist students in mastering specific vocational areas.

Because fellow students may be interested in learning more about visual impairments, information could be incorporated into courses. This information sharing may help to promote communication between all students and to minimize stereotypes.

Aids Available

There are numerous learning aids and tools available to assist blind students in vocational training. The most comprehensive source of such aids is **Aids and Appliances**, printed by the American Foundation for the Blind. Some aids are very basic and can be prepared by teachers, instructional aides, or student assistants. Other aids are expensive and, if needed, are usually purchased by larger districts, rehabilitation agencies, or special state or federal programs.

It takes time to learn to use any aid properly. Students may be frustrated and refuse to use even the most helpful aids because they receive no explanation or orientation in using it. Rehabilitation counselors or special needs teachers can be helpful resource instructors for students using special aids.

Some kinds of standard office and laboratory equipment are well suited to students with visual impairments. When selecting new equipment for a program, it is frequently necessary to choose between several models. It is important to remember that those with larger knobs, gradation markings that can be felt as well as seen, and easily accessible on/off switches are more easily operated by visually impaired students. Careful selection can eliminate the need for expensive modifications. Other small modifications can be made on standard machines such as making raised marks or special dots with glue.

It is important to consider the ways that students will use machinery in a job after the vocational training is complete. Inexpensive, improvised, easily reproduced modifications may be more effective than sophisticated solutions that cannot be transferred to any employer's business. Thus, when possible, try to provide aids that will make it possible to use existing pieces of equipment rather than ordering wholly modified machines.

Other Aids

In examinations, some visually impaired students will need modified testing formats. Tests may need to be prepared in large print, in braille, on cassette tapes, or converted into exercises using the sense of touch. Sometimes the testing format need not be changed, but teachers may need to allow extra time for visually impaired students to complete an exam or special assignment. It may be necessary to waive time limits and stress accuracy. It is important for students to be able to evaluate their progress in a course and to know when new material has been mastered. Teachers and counselors have commented that modifications or special time allotments should be minimal--only that which is needed by a particular student. Special considerations should not be designed to spoon-feed lazy students.

In classrooms and shops today, tape recording is the most frequently used technique for taking notes and for preparing modified learning materials. Although popular, listening to tape-recorded speech is much slower than the rate at which students can read printed material; thus, it takes more time to complete the assignment. Also, students cannot underline tape-recorded material and must review by stopping and starting the tape recorder in order to return to a specific point.

New Technology

Some innovative work is now being done with specially designed machines that compress speech on tape in order to speed up the recording and play-back

processes. Technology in this field is changing rapidly, and great advances are being made in machines that convert printed words into tactile projections, tones, or computer-generated speech.

The OPTACON (Optical to Tactile Converter) is a machine produced by Telesensory Systems, Inc. It allows blind students to read printed material. The OPTACON is made up of a small camera with an electronics component. Students move the camera across a line of type, and the electronics component converts light patterns into tactile patterns that can be felt. The OPTACON is still a slow process (85 words per minute); however, new attachments and companion equipment for the OPTACON convert light into sound and generate words at a rate of 225 words per minute.

The STEREOTONER is similar to the OPTACON, but it converts the printed word into a tone pattern. The OPTOPHONE and VISOTACTOR are two related machines that also convert print into sound. The speed of conversion was slow in prototype models, but is faster than reading braille. The conversion speed is accelerating with each model. These conversion machines all required that students have enough motor coordination to move the camera across the pages of printed material. The machines are expensive and are usually used by several students or on a district-wide basis in order to justify the initial expense.

Many teachers of the visually impaired no longer concentrate on having their students learn braille. Braille is a slow process and is rapidly being outpaced by new, albeit expensive, machines. Such machines, however, are becoming more affordable as more models are made.

The KURZWEIL READING MACHINE converts standard English text on a computer into easily comprehended speech. The machine is attached to a computer terminal and has an unlimited vocabulary. The U.S. Bureau of Education for the Handicapped has purchased models of the KURZWEIL READING MACHINE and placed them in special and regular schools, as well as libraries, where they can be used by visually impaired students.

Other sophisticated applicances and machines have been developed to assist visually impaired students. They include:

1. Digital Indexing Tape Recorder System (allows students to rewind an audiotape and stop at a preplanned point, thus decreasing search time when reviewing taped notes)
2. Talking Cash Register
3. Speech Output Accessory (transmits digital laboratory instrument readings into auditory tones)
4. Floor and table scales with auditory signals
5. Telephone switchboard with raised markings and tone for the visually impaired
6. Automatic fluid measuring devices for darkroom work
7. Guards and feed indicators for lathes and other industrial machinery

There are many general tools or aids readily available to visually impaired students to assist them in reading or writing lessons for vocational courses. Some of the most frequently used include:

1. Braille
2. Large print
3. Tape recorders

4. Talking books
5. Raised letters
6. Slate and stylus (used to make braille notes)
7. Braille writer (a 6-key manually operated machine)
8. Typewriters
9. Braille verifier (types braille and regular copy simultaneously)
10. Signature guides

For courses in mathematics and computer programming, there are also many readily available aids, including:

1. Abacuses designed for the blind
2. Raised clock faces
3. Wire geometrical forms
4. Braille rulers
5. Raised-line checkbooks
6. Braille dominoes
7. Braille flashcards
8. Raised-line drawing boards
9. Cubes with raised braille dots used for simple mathematical problems
10. Raised-line paper or graphs
11. Computer terminals that use braille printers, or those that type braille and conventional type simultaneously
12. Talking calculators

Aids that are used frequently in other vocational courses include:

1. Braille maps, charts, diagrams
2. Self-threading needles
3. Wooden or cardboard models of specimens that other students see through microscopes
4. Braille micrometers and other shop tools that have special raised markings
5. One-handed tools such as ratchet screwdrivers
6. Braille Dymo tapes to mark lab equipment and models
7. Light probes with audible sounds that check the operating status of machines
8. Guides or templates to help students align objects properly (drill guides, etc.)

Students who have been visually impaired for several years usually prefer specific aids or machines, but newly blinded students may be working with vocational counselors to determine what learning tools are most beneficial to them. In designing modifications or selecting specific aids or appliances, the students themselves will be the best resource guides as to what modifications will work most effectively for them. Teachers can assist these students by providing extra storage or work space for visual aids or appliances.

Some machines may have several control knobs or switches. Students will probably come to recognize these by touch as they gain experience. Until then, raised markings--glued dots or pieces or tape on certain knobs--can help. If two dials are close together, one can be notched or filed down for easier recognition. These and other improvisations take time, but are inexpensive and can be reproduced in the future work place.

Modifications and Strategies for Working with Partially Sighted Students

Many strategies and modifications that are successful with students who have little or no vision are also appropriate for use with partially sighted students. The major difference is the opportunity to maximize residual vision and learning skills partially sighted students have. Even partially sighted students may find routine classroom or lab activities difficult, or even impossible, to perform. These include:

1. Seeing the chalkboard
2. Taking notes
3. Reading
4. Writing exams or papers
5. Seeing charts, filmstrips, other audio-visual aids
6. Reading markings on small instruments such as thermometers or gauges
7. Starting machines or threading sewing machines

Usually students with partial sight read print faster than they read braille, but at a slower pace than that of other students. If 80 percent of the schoolwork revolves around reading or close visual activity, then partially sighted students will need much more time to complete assignments. (Hanninen 1975) Also, partially sighted students may need modifications in the testing process such as oral tests, taped tests where students type answers, or take-home tests that may be read to the students.

Teachers can help partially sighted students by arranging seats to allow for the best lighting conditions, thus minimizing glare. In addition, teachers should speak directly to the class, rather than toward the chalkboard or the front of the room. During demonstrations, as many opportunities as possible should be provided for partially sighted students to observe closely or to touch the materials. Teachers may also pair visually impaired students with sighted students. Sighted students would help orient visually impaired students to new tasks or projects.

Partially sighted students find that unglazed paper, soft lead pencils, and felt tip marking pens assist them in reading directions or exams. Typewriters with large-sized type can be used to produce handouts for these students or can be used by the students themselves. Ditto copies (with purple ink) are harder to read than black ink, but the teacher can aid partially sighted students by giving them the master, which is usually darker and more readable. Books with large type are also becoming more generally available in a wide variety of vocational fields.

There are numerous visual aids that can assist partially sighted students in a classroom. Aids may be purchased by the student, be funded by the State Rehabilitation Department, or belong to the school. Examples of such aids include:

1. Regular or special eyeglasses or contacts
2. Portable magnifiers (hand-held, pocket, etc.)
3. Desk model magnifiers (binoculars, monoculars, telescopes)
4. Portable mechanical, optical devices such as image intensifier devices
5. Yellow acetate to cover a printed page and heighten the contrast
6. Penlights
7. White canes
8. Special frames to fit to eyes, glasses, or special equipment
9. Writing guides, heavy lined paper, broad felt tip pens, etc.

10. Special sunglasses
11. Opaque, overhead, or slide projectors
12. Special lamps (desk or floor models)
13. Large print
14. Visors, filters, reading slits
15. Bookstands to bring printed matter comfortably closer to the eyes
16. Closed circuit television (CCTV) (enlarges material to facilitate reading)
17. Passive infrared night viewing devices
18. Classroom television systems

These visual aids can be most useful to students, particularly if they are introduced early in the educational experience. Unfortunately, too many students, parents, and professionals rely soley on ordinary eyeglasses and refuse to employ these more effective, and perhaps more obvious, visual aids.

Business and Office Programs

Typewriters with braille keys are available, but are expensive. As an alternative, some teachers have used braille Dymo tape to cover the keys of conventional typewriters with braille letters. Generally, if such modifications are needed, it is likely to be for a short period of time. Once students learn how to type and gain speed, they rarely look at the keys and rely on touch instead. Thus, modifications of typing curriculum for visually impaired students usually focus on the initial learning process and general skill building lessons.

Most teachers who modify typing courses for visually impaired students tape record lessons. Students can then use headphones to listen to the tapes in the typing lab or learning center. These tapes can also be used by other students who are absent and miss a class lesson.

One teacher reported that using a regular cassette tape recorder could be a problem if blind students did not understand an explanation and wanted to listen to a specific part again. Students would have to take their hands off the typewriter keyboards, rewind the tape, then reposition their hands on the typewriters. The teacher reduced the time needed for this process by putting the cassette in a transcribing machine. Students could then turn the tape on and off and rewind the tape by using foot controls. The teacher also recorded all review sessions and tests for the students' use. (Anita F. Collins, 1979)

At a vocational technical institute in Wisconsin, a business education teacher received a special grant to record all the Typing I lessons on cassette tapes. Each tape first lists the materials needed for the lesson, then the objectives of the lesson, points to remember, directions, and, finally, skill building drills. The teacher recommends that when students are to type the same line over and over again, the line should be read as many times as it is to be typed. (Jane Tealey, 1979, Typing Instructor, Program for the Visually Impaired, North Central Technical Institute, Wausau, Wisconsin) This modification process takes time and planning; but once completed, these lessons can be used by numerous students. Furthermore, several vocational technical institutes in Wisconsin share their taped lessons to reduce costs and duplication.

Computer Science and Data Processing

Currently, a popular vocational area selected by visually impaired students is computer science/data processing. Career opportunities are good and this has attracted many students. Several secondary and postsecondary vocational schools offer pre-enrollment information seminars or evaluation sessions for visually impaired students who are interested in data processing as a career. In these sessions, both students and teachers can evaluate the possibility of success in the program.

In data processing courses, some instructors put lessons on cassette tapes; others use prepackaged brailled lesson materials. The state of California and the System Development Corporation have cooperatively developed a modified program for teaching data processing. The program includes brailled reference materials and handouts that are reproduced on a braille duplicator, called a Thermoform. For partially sighted students, lessons are put on closed circuit television tapes to enlarge printed material. Students without sight use the optacon.

The California course is six hours a day for six months. It is divided into modules that allow revisions to be made easily. Instructors present lectures with specific verbal descriptions and new materials. Students record these lectures to use when they review for tests. Partially sighted students in this computer science curriculum use visual aids, including monoculars and lighted magnifying glasses. Students with little usable vision design their own programs or record them on tapes to be key punched at a later time. The instructors seek to rely as little as possible on prepackaged or brailled materials because of the rapidly changing nature of the computer industry. (Stewart E. Charleston, California, 1979, State Department of Rehabilitation)

In other programs, schools have purchased braille terminals to be attached to computers. Otherwise, there have been few modifications. (Ralph Andren, North Central Technical Institute, Wausau, Wisconsin) Some instructors rely on instructional aides to interpret written materials and chalkboard instructions. Other programs do not require visually impaired students to do their own key punching but have instructional aides do that. Instructors feel that lack of key punching skills will not limit students' employment opportunities because once on a job, such work will be done in a separate key punching department. Program directors cite costs as a reason to use instructional aides in technical areas, rather than develop audio or brailled materials. It may cost $1500 to $2000 for materials and staff time to prepare materials that may soon be outdated. (George Sippl, Visually Impaired Department, Milwaukee Area Technical College, Milwaukee, Wisconsin, 1979)

There are many other business/distributive education programs in which modifications are being made for the visually impaired. One other example is the program to train Information Service Expediters. Expediters are responsible for providing information over the telephone or other telecommunications equipment. The program was developed by the Rehabilitation Institute at Southern Illinois University. At the beginning of students' training, relevant business, listening, and interpersonal skills are assessed. Then, individual modifications or referrals for counseling can be made as needed during the training period. A wide variety of teaching strategies is used, but the Information Service Expediting curriculum is the same for both sighted and visually impaired students. Rather than transcribe a large number of reference materials into braille, students memorize information.

Repetition and drill are emphasized. Instructors also stress the need to provide adequate work space for students to store such equipment as the brailler, typewriter, recorder, and embossed books. Other equipment needed by students includes braille paper, slate and stylus, cassette recorder and tapes, appropriate light probes or other visual aids, files, and signature guides. This program has been used by several districts, and the teaching strategies have been adopted in other curriculum areas. (Louis Vieceli, Rehabilitation Institute, Southern Illinois University, Carbondale, Illinois, 1979)

Trade and Industry

Teachers who have developed modifications for printed and visual materials have asked how laboratory or shop programs and lessons can be similarly modified. With the use of audio aids, instructional aides or peer tutors, and adapted equipment, many more visually impaired students are entering programs in trade and industry vocational areas.

One instructor modified a fuel injection course for visually impaired students in diesel mechanics. The instructor began by setting specific course goals for blind students. Together they selected the specific tasks performed by a diesel mechanic where vision is not required. They then outlined a training program to use these skills. When finished with this program, students will receive a "Limited Diploma" in diesel mechanics listing specific skills that have been mastered.

In modifying this specific course, the instructor assessed the students' needs and decided that a micrometer with braille markings would be needed. It was also necessary to have a person record the text in braille. In developing individual prescriptions for visually impaired students, the instructor and students determined that injection pump disassembly and reassembly could be mastered, as could limited inspection activities and problem diagnosis. Most of the time, shop work was done with partners. This peer teaching program freed the instructor to work with other students. (Jim Koehntopp, Mid-State Technical Institute, Wisconsin Rapids, Wisconsin, 1979)

In developing a course in transportation for visually impaired students at State University College in Oswego, New York, teachers are encouraged to use cutaways and mock-ups of small engine and automobile components to allow hands-on examination. Students are then able to dissassemble and reassemble small motors, as long as they are careful to keep parts separated and in order. Special aids such as blade-type guages rather than wire feeler gauges and standard gauges without covers are easier for visually impaired students to use. Along with these modifications, instructors are encouraged to pair partially sighted or other students with visually impaired students.

In a metals course developed in Oswego, modifications are suggested for visually impaired students. Metalworking materials are marked so that measurements can be felt as well as seen. In addition, it is important for instructors to orient students to the shop and to metalworking equipment prior to the first day of class. In working with machines, students can be taught to count the number of revolutions made by the controls. In this metals course, as in a basic electricity course, mock-ups that use cutouts and buzzers demonstrate basic principles. Also, tape recordings can be used to provide students with information about work that will be accomplished the next day.

In a woodworking course, students without sight can be taught to identify woods by smell, feel, density, and weight. Simple raised-line drawings for reading plans can be prepared by using a kit prepared by the American Federation for the Blind (AFB). This raised-line kit and others are listed in the AFB's **Aids and Appliances** directory. These and other modifications suggested at State University College require pre-planning but involve only minimal expenses. (Aanninen, 1975)

Finally, one of the most complete trade and industry programs using modified materials is the Multiple Learning Strategies developed at the Ingham Intermediate School District in Mason, Michigan (1979). Over 1,300 lesson modules in all vocational areas have been developed. These include large visuals and modules printed in large block type for use in small engine repair, graphics, and other programs in trade industry.

Health Occupations

A vocational area that offers significant challenge and promise for visually impaired students is health occupations. Traditionally, there has been much concern that modifications for the visually impaired would be so extensive that there would be no substance left in vocational courses. Another fear has been that such graduates would be unable to obtain employment. However, several courses and graduates are currently proving successful in this field.

Occupational and Physical Therapy Programs

One current program trains blind students in occupations and physical therapy at St. Mary's Junior College in Minneapolis, Minnesota. Still in its initial three-year test period, the program modifies curricula, teaching strategies, and placement procedures to enable the visually impaired to successfully enter the allied health field. Instead of using traditional demonstrations in front of the class, blind students are used as demonstration models and thus can feel, rather than see, the techniques. Written instructions and materials have been recorded on tape by the Minnesota Services for the Blind and by readers at the college. Braille Dymo tape is used to label anatomical models.

The program's coordinators sought to limit the amount of adapted equipment needed in the program. The equipment used includes braille measuring devices, timing devices, sphygmomanometers, thermometers, light probes that emit a beep, and meter readers with audio signals. Most of this equipment is available through the American Foundation for the Blind, although the talking meter was developed at the school. The college has increased support services for the visually impaired and offers a complete orientation program. To date, the coordinators have concluded that only minor modifications have been necessary to allow visually impaired students to be successful in these allied health fields. (Sevdy and Baum, St. Mary's Junior College, Minneapolis, Minnesota, 1979)

Other Fields

In other vocational areas, successful modifications have been made. Home economics and agricultural vocational training programs are examples. At Eastern Michigan University, Mary Krieger (1979) has developed a program in hand sewing, pattern layout and cutting, and machine sewing. She video-tapes lessons and used them as an awareness and instructional tool for home economics teachers. After viewing these modified lessons on video tape, Krieger reports positive attitude changes in teachers previously hesitant about working with visually impaired

students. These modified lessons stress using the other senses of touch, hearing, and smell. Instructors are encouraged to allow more time for students to complete certain activities and to assign fellow students as peer teachers. Above all, independence, freedom of movement, and minor equipment adaptations are stressed in integrating visually impaired students into regular classes.

In agriculture and horticultue, many programs have been modified for visually impaired students. For example, at the Georgia Academy for the Blind in Macon, Georgia, a horticulture program has been developed for blind students. In a twelve-month training program at the high school and postsecondary levels, tactile instruction and models have been added to instructional lessons in growing bedding plants, cut flowers, shrubs, and fruit trees. (Hanninen, 1975)

Support Services

In many secondary and postsecondary vocational programs, an important element for success in modified curricula is an effective program of support services. Counselors, tutors, and instructional aides can orient visually impaired students to a class, a laboratory, or the entire school. Support services personnel have a greater degree of flexibility in adapting materials to audio or tactile forms, and can provide invaluable support to classroom teachers.

School districts support these instructional services or seek outside funding to supplement local monies. Requirements for paraprofessionals in support service programs vary greatly from district to district, as do training programs. Some tutors or instructional aides are advanced or second-year students who are paid at the federal minimum wage rate to assist new students in the program. Other aides are professional counselors, graduates of four-year college programs in special education or guidance, or experts in particular vocational areas. Others are assigned to assist several students in one specific vocational area. Some programs for training support service personnel are two weeks to one month long. Several hours a day are spent covering information about the district's vocational training programs. Simulations of handicapping conditions and medical information about visual loss are presented to some aides by in-house counselors or outside resource personnel. More frequently, however, training lasts one week or less and is informal, or consists of reading a training manual. Most directors of support services conclude that selection of interested, creative, and eager aides is at the heart of successful programs. (Moshein and Sippl, 1979)

In addition to support service personnel, prevocational and vocational assessment programs have increased opportunities for the success of visually impaired students. In prevocational programs, students can develop the basic skills needed to succeed in vocational programs. These prevocational programs can be taken either prior to admission or simultaneously with introductory courses. Vocational assessment programs allow students, counselors, and teachers to examine a student's ability to succeed in a specific vocational area.

Another program that some vocational districts offer to handicapped students is an open-entry/open-exit program. In this type of program, students can enter a course at various times during the term. They proceed at their own rate until they have mastered all the needed skills. Then they can leave the course and proceed to the next level. Courses with open-entry/open-exit options are presented in modules and thus allow more flexibility for students. The use of instructional aides to assist instructors has allowed more students to enroll in open-entry/open-exit programs.

Classroom Adaptations for Teaching Visually Impaired Students in Vocational Education

Student Characteristics	Problem-Causing Situations And Tasks	Examples of Classroom Adaptations
Cognitive Skills		
1. Possesses normal intelligence and potential for educational achievement unless an identified mental handicap exits in addition to the visual handicap.	1. Excluding students due to questionable intellectual ability, from regular classroom activities and responsibilities such as: a. reports or presentations b. lab/shop activities c. maintenance responsibilities d. responsibility for personal belongings e. assisting the instructor	1. Encourage students to take responsibility as part of the group. a. Call on students during class discussions; the same as for any other students. b. Expect participation and leadership in group projects. Have peers assist in deciding what the students' share in the project should be. c. Expect students to care for personal belongings the same as other students. One exception might be the need to designate storage areas for special equipment in the classroom such as tape recorders, braillers, etc. d. Allow students to take turns in running errands, checking in equipment, distributing papers, etc. e. If participation in an activity is not possible, never have students sit idle. Provide an alternate activity with a similar objective. Ask the vision resource teacher for suggestions and help with materials. f. Require the same standards of behavior from the students as would be required for other students.

Student Characteristics	Problem-Causing Situations And Tasks	Examples of Classroom Adaptations
		g. Expect students to ask questions when concepts or explanations are not clearly understood.
2. Is unable to rely on sight to determine the relationship of one subject to another. a. Has poorly developed concept of space. b. Has poorly developed concept of an object. (1) shape (2) size	2. Assigning tasks which require prior knowledge of the relationships of objects to one another, or tasks where shape and size are of importance.	2. a. When relationships, shapes, or sizes are factors in completing a task successfully, give students specific verbal and tactile instructions on the information prior to assigning the task. Have other students assist in the process. b. Explain meaningful terms related to shapes and sizes and relationships of objects that pertain to your field prior to the lesson which requires application of the terms. c. Use auditory and tactile demonstrations to each relationship, size, and shape. (1) Give verbal description of locations, shapes, etc. (2) Turn machinery on to give auditory clues for differentiating each machine, etc. (3) Give clear, detailed descriptions which outline the total picture. Do not point. Verbalize visual clues. d. Specifically teach the shapes of signs, equipment, etc. when necessary for skill achievement.

Student Characteristics	Problem-Causing Situations And Tasks	Examples of Classroom Adaptations
		e. Have students follow your hand while performing a task. Have students handle the materials or assist in the demonstration period. Allow students to stand next to or to the side of the demonstration. Never stand with your back to the window where light silhouettes the demonstration.
	3. Using abstract references which indicate shape, size, direction, etc.	3. Avoid using abstract terms such as "over here," this fastens on there," right there," etc. 4. Emphasize to the student the importance of communicating tactile and auditory clues to memory for future reference. 5. Use models to illustrate the space and form of an object by having students feel the model. 6. Use logical, sequenced instructional procedures to assist students in unifying information to form a complete image of the whole concept being taught.
Physical Skills		
1. Is unable to use senses other than sight to establish one's position and functional relationships to objects in the environment.	1. a. Ignoring the fact that initial disorientation is common when in new surroundings.	1. a. Provide an orientation activity for students before class has begun to be certain that they have been made aware of such things as: (1) seating arrangements (2) their desks (3) teacher's desk (4) waste paper basket (5) pencil sharpener

Student Characteristics	Problem-Causing Situations And Tasks	Examples of Classroom Adaptations
		(6) front and back of room (7) electrical outlets (8) equipment routinely stored in room (9) directions for emergency drills
	b. Expecting students unfamilair with the physical arrangements of the classroom -- seating, equipment, doorways, etc.--and possibly the entire building to complete assignments successfully.	b. Use key points of reference to teach location. Provide an orientation for the class regarding the abilities as well as disabilities of new students.
	c. Giving demonstrations in class by only pointing to specific parts or locations. For example: pointing to a switch and saying "This turns on the machine."	c. Instruct students to remind others that orientation is necessary when students are introduced to new situations.
	d. Expecting students to respond to visual clues: nods, pointing, facial expressions.	d. Encourage other students to be helpful, yet not by doing the students' work.
	e. Constantly changing or reorganizing physical arrangements.	e. Seat students in a position where you can be heard clearly and where there is adequate lighting. f. Address students by name. Do not talk to students through other persons. g. When approaching students outside the class, always state your name. h. Use verbal description and locations during instruction.
2. Experiences difficulty in moving safely, efficently, and comfortably from one place to another within the environment by using senses other than sight.	2. a. Expecting students to immediately move around facilities unaided.	2. a. Find peers in the class to serve as guides for the students during the first couple of weeks in the room and in case of disaster drills. Great care should be exercised selecting guides. These peers must be willing assistants.

Student Characteristics	Problem-Causing Situations And Tasks	Examples of Classroom Adaptations
	b. Being uneasy about correcting inappropriate behaviors of students or expecting too much.	b. Allow a reasonable amount of travel time between classes, as well as more time for completing assignments.
	c. Having a general uneasiness about having the students in the classroom.	c. Assess and attend to orientation and mobility concerns before beginning any instruction or making any assignments. This will take more time at first, but not on a continuous basis.
	d. Allowing unnecessary noises during classroom instruction or demonstration.	d. Inquire if the students have had formal orientation and mobility training. If not, seek these through the school district. They are vital for future employment success.
		e. Teach skills that will lead to independent functioning. The more students rely on personal skills, the more acceptable they are to employers, fellow employees, relatives, friends, and associates.
		f. Modify training procedures to best prepare the students.
		g. Examine personal attitudes toward working with blind persons. Positive acceptance is essential.
		h. Be alert to detect extraneous noises that might be masking the auditory cues necessary for getting around easily and for instructional purposes.
		i. Include students in all activities. Make adaptations when needed.

Student Characteristics	Problem-Causing Situations And Tasks	Examples of Classroom Adaptations
		k. In labs/shops devise work habits that keep work areas clean. Example: When pouring liquid, students should be taught to do it over a large pan. Use safety precautions. (1) Doors should be all the way open when in use and all the way closed at any other time. (2) Notify students of any changes in the physical arrangement in a room. (3) Keep electrical cords and protruding handles out of the way. (4) Avoid noises that mask a hazard. (5) Avoid undue glare or shadow effects that mask a hazard. (6) Equip all machines with appropriate and adequate safeguards. (7) Teach tool handling and demand complete competence before allowing independent use. (8) Install tactile or auditory safety devices when necessary.
Communication Skills		
1. Is unable to read standard print materials, visual presentations, and three-dimensional instructional aids.	1. Using exclusively: a. standard print textbooks b. audio-visual instruction (1) films (2) filmstrips (3) video-tape recordings (4) charts c. other visuals (1) graphs	1. Encourage students to use adaptive aids. Provide a space for storing them.

Student Characteristics	Problem-Causing Situations And Tasks	Examples of Classroom Adaptations
	(2) photographs (3) 3-D models	
2. Relies upon other senses more heavily and, therefore, often is more fully skilled in areas involving other senses.	2. Requiring large amounts of written assignments, note-taking and/or tests. 3. Failing to make necessary instructional modifications. 4. Failing to use appropriate aids or instructional resources to assist in making modifications. 5. Nagging students about holding books too close. Sometimes this is needed to see and it does not injure vision. 6. Showing films or using the chalkboard without giving verbal descriptions or providing copies of notes. 7. Failing to help students use other senses in learning classroom materials.	2. Have students use braillers or enlarged-print textbooks. 3. Use visuals with heavy, dark print. 4. When using the chalkboard or showing filmstrips or films, read the titles aloud. Have students sit close to the screen. 5. Have sighted students relate or describe what is happening during a film or filmstrip to visually impaired students. 6. Allow students more time for reading assignments, as "touch" reading is more time-consuming. 7. Give written tests, study sheets, etc. to vision resource teachers to braille or make arrangements for oral tests. 8. If students can type, require that written assignments be typed. 9. Accept tape-recorded responses to study questions. Record your remarks or write them and give them to vision resource persons to braille. 10. See that students have access either to braillers or tape recorders for note-taking in class. Other aids might include records, electronic devices, volunteer aids, etc. In addition to large-print books, magnifying lenses and closed circuit TV can be used for partially sighted students.

Student Characteristics	Problem-Causing Situations And Tasks	Examples of Classroom Adaptations
		11. Speak, act, and plan teaching activities as normal, but a. Recognize when adaptations will be necessary. b. Know who and what resources are available and use them. c. Do not worry about using words such as "blind," "look," or "see" when speaking. The words will not offend. 12. Use black ink--it is easier for large-print readers to read. 13. Give students desk copies of maps, charts, and diagrams used in class instruction. 14. Give students copies of all class notes for studying with other students. Or, ask other students to make carbon copies of their notes.
Social Skills		
1. Needs interaction and acceptance by others just as normal students do. 2. No inherent emotional problems should be expected due to visual handicap. 3. Attitudes of others bear on self-esteem and self-image. 4. Is able to become independent with training.	1. Isolating students in classroom activities. 2. Negative attitudes from instructor or classmates. 3. Failing to incorporate independent learning skills into training programs. 4. Accepting two different standards of behavior--one for visually impaired students and one for other students.	1. Expect acceptance and positive attitudes toward students from peers and other instructors. 2. To encourage a positive atmosphere, discuss problems which arise with persons involved. 3. Encourage students to take leadership positions just as other students do. 4. Apply the same disciplinary rules for all, including visually handicapped students.

Student Characteristics	Problem-Causing Situations And Tasks	Examples of Classroom Adaptations
5. Exhibits inappropriate behavior mannerisms such as rocking, eye poking, looking away from speaker, etc.	5. Allowing students to exhibit inappropriate mannerisms such as eye poking, rubbing eyes, rocking, facial contortions, gestures, extra movements, etc.	5. Encourage good posture and use behavior management techniques to eliminate inappropriate mannerisms.
6. Exhibits inappropriate behavior due to lack of visual behavior models (e.g., dress, body movements, etc.)	6. Ignoring untidy or inappropriate dress, hair style, gait or posture.	6. Encourage as much independence as possible in normal class routine. Work toward total independence and social acceptance. 7. Encourage students to look in the direction of the speaker. 8. Encourage students to participate in extracurricular activities. 9. See that notices of activities or other announcements are brailled and posted in a familiar spot on the bulletin board. 10. Assist students through guided instruction on personal appearance, gait, posture, etc. Help students devise systems for dressing appropriately through braille tags, color markers, etc.

Some Do's and Don'ts When Teaching Visually Impaired Students

1. Do talk and act naturally.
2. Do address blind persons by name.
3. Do identify yourself by name.
4. Do speak distinctly and in normal tones.
5. Do consider your voice.
6. Do guide blind persons verbally whenever practical.
7. Do not startle blind persons by sudden, unexpected sounds or touches.
8. Do not do anything for blind persons that they can do for themselves.
9. Do not give blind persons unearned privileges or indulgencies.
10. Do not drag, hoist, or propel blind persons.
11. Do not leave blind persons stranded.

A Recap of Tips When Teaching Visually Impaired Students

1. Keep work areas well lighted.
2. Have desks with adjustable tops for visually handicapped students.
3. Make sure to have special writing paper--dull finish with widely spaced green lines--for students to use.
4. For writing instruments, use felt-tip or nylon-tipped markers, black ball point pens, and thick pencils with soft lead.
5. Do written work on board only when necessary and use large, clear print.
6. Orient students to classroom surroundings.
7. Keep classroom orderly and free of dangerous objects.
8. Include visually impaired students in daily assigned chores in the classroom.
9. Give each student a place to call his/her own.
10. Address students by name.
11. While writing on the chalkboard, read aloud what is written so that students can follow along.
12. Utilize tape recorders and other listening devices while teaching visually impaired students.
13. Speak clearly and distinctly.

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Books on Tape. Full-length readings of best sellers, classics, fiction, nonfiction, history, travel, and adventure recorded on cassette tapes. Mail order delivery and return; rental fees start at $6.50. For free catalog, write Books on Tape, Inc., Department G.P.O., Box 71405, Los Angeles, California 90071.

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Resources

American Foundation for the Blind
15 West 16th Street
New York, New York 10011
(212) 924-0420
(Library services, aids and appliances, and talking books for the blind and multiple handicapped)

American Printing House for the Blind, Inc.
1839 Frankfort Avenue
Louisville, Kentucky 40206
(502) 895-2405
(Provides instructional aids on behalf of the federal government for students in vocational programs)

Association for the Education of the Visually Handicapped
919 Walnut Street
Philadelphia, Pennsylvania 19107
(215) 923-7555
(Materials and information)

National Braille Association
85 Godwin Avenue
Midland Park, New Jersey 08432
(201) 447-1484
(Braille, large type, and recorded materials)

National Federation of the Blind
1800 Johnson Street
Baltimore, Maryland 21230
(301) 659-9314
(An organization of the blind that offers information about services and support)

Recording for the Blind, Inc.
215 East 58th Street
New York, New York 10022
(212) 751-0860
(Free loan of recorded educational material)

Recording for the Blind, Inc.
499 West Charleston Road
Palo Alto, California 94306
(415) 493-3717
(Free recorded educational materials)

Rehabilitation Services Administration
Office for the Blind and Visually Handicapped
303 C Street S.W.
Washington, D. C. 20201
(General rehabilitation services)

South Carolina State Library
Division for the Blind and Physically Handicapped
700 Knox Abbot Drive
Cayce, South Carolina 29033
(800) 922-7818 (toll free)
(Free loan of taped books and other instructional materials as well as equipment for the visually impaired and learning disabled)

The State Department of Vocational Rehabilitation and Bureau of Services for the Blind in each state

Vocational Curriculum Resources for Handicapped Students
Maryland Vocational Curriculum Research and Development Center
J.M. Patterson Buidling
University of Maryland
College Park, Maryland 20742
(A guide to print and non-print instructional materials)

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- General Music
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- Fiction/NonFiction, K-Adult
- Cookbooks
- General Music
- Periodicals

_____VACUUM-FORM BRAILLE - from Volunteer Transcribed Masters
- Regular Textbooks, K-12
- Supplementary Reading, K-12

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Please check the items which would be of value to you. Complete the form below and return to the following address: CATALOG MAILING LIST, American Printing House for the Blind, 1839 Frankfort Avenue, Louisville, Kentucky 40206.

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_____ Please send the items checked above and place my name on your mailing list for future reprints and supplements.

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Exemplary Programs

Program Title: Cape Cod Regional Technical High School

Address: Pleasant Lake Avenue
Harwick, Massachusetts 02645

Contact Person: A. Paul Hackett, Coordinator of Special Needs

Target Population Characteristics: The special needs program at the high school serves approximately 150 of 1,000 students in grades nine through twelve. These 150 have neurological damage, hearing impairments, mild retardation, emotional disturbances, and visual handicaps.

Sponsorship: The program is funded by the Massachusetts Department of Education.

Staffing Pattern: The special needs program is integrated with the regular high school program. Staff support for handicapped clients consists of four departmentally assigned academic resource teachers, three vocational resource teachers, and three teacher aides who work primarily in the vocational area.

Program Objectives: This program is designed to provide resource services for handicapped students and for regular teachers who deal with handicapped students in their classrooms and shops when there is need for individual students to receive special services in order to achieve success and growth.

Types of Program Activities: Fully trained and vocationally approved vocational teachers act as resource persons to both handicapped students and regular vocational teachers. Students have a choice of twenty-two vocational training programs. The functions of the vocational resource teacher are to:

1. Diagnose the special learning needs of students in the vocational area.
2. Assist vocational teachers in developing adaptive and alternative programs for special needs students.
3. Provide intense small group and individual vocational instruction in regular shops.
4. Provide a resource for crisis intervention with special needs students.
5. Monitor individual educational plans.

Program Title: Lynhaven Career Center

Address 3560 Lynhaven Drive
Columbia, South Carolina 29204
Telephone: 803/786-5600

Principal: Dr. Lynn Smith

Contact Person: Jim Bagnal
Teacher Coordinator
Handicapped Vocational Education

Target Population Characteristics: Lynhaven Career Center is designed to serve approximately 600 high school students who are provided transportation to the center from five inner city schools for vocational training. Of this number, approximately 75 identified handicapped students receive vocational training in a mainstreamed setting. The handicapping conditions include educable mentally handicapped, learning disabled, emotional, and hearing handicapped students in grades 9 through 12.

Sponsorship: Local, state, and federal funds contribute to the operation of the program.

Staffing Pattern: The special needs program is integrated with the regular high school program in a mainstreamed approach. Staff support includes a principal, assistant principal, counselor, 15 vocational teachers, ten aides, and three interpreters for the nine hearing impaired students currently enrolled in the program. A teacher-coordinator for handicapped vocational education helps in the mainstreaming of special needs students in the various vocational courses.

A vital part of the success of the mainstreaming approach takes place before students enter the program. Ninth and tenth grade special needs students are assessed through the use of the Talent Assessment Program which measures the innate vocational abilities of students. Also a team approach is used in vocational placement in which guidance counselors, special and vocational education teachers set down, discuss, and, if necessary, write individual education plans for the students if adaptations are needed.

Another aspect of the program is the flexibility to transfer students to more appropriate courses if teachers note less than acceptable progress early in the school year.

Program Objective: This program is designed to provide special needs students with the opportunity for vocational training along with their nonhandicapped peers.

Types of Program Activities: The program provides instruction and hands-on activities in the following vocational areas: graphic arts, auto body repair, auto mechanics, brick masonry, welding, machine shop, building construction, electricity, electronics, food service, child care, cosmetology, and health careers.

Support Services: Services for handicapped students at Lynhaven Career Center include vocational counseling, individual personal adjustment, individual work adjustment, assistance from teacher-coordinator for handicapped vocational education, and services through Vocational Rehabilitation.

Program Title: Vocational Assessment Center

Address: 4345 Fifty-fourth Street
San Diego, California 92115

Contact Person: Gwen Hutchinson

Target Population Characteristics: Students in special education classes and all handicapped students at the secondary level in the San Diego City Schools are provided with vocational planning/programming services through the center. For students who cannot be appropriately assessed there, the center subcontracts with Sharp Rehabilitation Center.

Sponsorship: The project is funded by Vocational Education Act monies for handicapped students.

Staffing Pattern: The master plan for the center calls for four full-time and one half-time rehabilitation counselors, as well as in-service for special and regular education teachers, vocational education and regional occupational program teachers. The assessment center also includes resource specialists, district counselors, and related personnel.

Program Objectives: The goals of the program are to increase opportunities for participation of handicapped students in prevocational/vocational education in a planned sequential and systematic process and to develop in selected students the abilities and attitudes necessary to function in vocational courses and/or work experience programs.

Types of Program Activities: The regular educational and vocational curriculum incorporates a program for the handicapped that addresses self-concept, dealing with feelings (positive/negative), coping skills, and self-acceptance.

Support Services: Extensive involvement of parents and the community is incorporated within the system to cooperatively assist the prevocational/vocational plans and the vocational aspirational needs of students.

Program Title: Richland School District One Vocational Rehabilitation - Public School Program (VR-PS Program)

Address: 1323 Washington Street
Columbia, South Carolina 29201

Project Director: Paul McCravy

Vocational Production Coordinator: Agnes Weiss

Target Population Characteristics: The VR-PS Program is designed to serve approximately 100 students in Richland School District One including trainable, educable, emotionally, and orthopedically handicapped. The center also serves additional clients throughout the area. The students must be 16 years of age and enrolled in self-contained classes in their respective schools.

Sponsorship: Local, state, and federal funding through both Vocational Rehabilitation and Richland School District One is used in the fiscal operation of the program.

Staffing Pattern: The Vocational Rehabilitation - Public School Program is composed of six Vocational Rehabilitation employees and seven school employees. The VR staff consists of a project supervisor, two counselors, two casework assistants, and one evaluator. The school staff is composed of three teachers and four aides.

Program Objectives: The emphasis of the program is the provision of realistic work experiences in order to assist handicapped individuals in developing work-related skills in order that they may be able to successfully enter the world of work upon completion of high school.

Types of Program Activities: The program is designed to provide subcontract work obtained through local business and industry. The students are paid on a piece rate basis which is governed by a Department of Labor Handicapped Work Certificate and are covered under Workmen's Compensation.

Support Services: The students enrolled in the program receive a complete vocational evaluation, medical evaluation, personal-social adjustment, guidance and counseling. Additional services such as dental treatment and glasses are provided as needed. The program has also been beneficial in helping some students with employment after high school and also in continuing their education in the local TEC system.

Program Title: Special Handicapped Occupational Education

Address: Board of Cooperative Educational Service
Second Supervisory District of Suffolk County
201 Sunrise Highway
Patchogue, New York 11772

Contact Person: Eugene J. Masucci, Administrator

Target Population Characteristics: The program serves approximately 640 students ages twelve to twenty-one with the following handicapping conditions: educable mentally retarded (EMR), emotionally disturbed, neurologically impaired, learning disabled, learning adjustment, and physically handicapped.

Sponsorship: The program operates at two facilities, to which the sending school district pays $2,200 per client.

Staffing Pattern: One career center is staffed by a principal, an assistant principal, a nurse, and 19 teachers (serving 380 students); the other is staffed by a principal and nine teachers (serving 260 students). Auxiliary personnel include four secreataries, an account clerk, and three full-time and one half-time custodial employees.

Program Objectives: The objectives of the program are:

1. To assist handicapped secondary students in testing, exploring, and selecting occupational subjects
2. To provide Occupational Education (OE) instructional programs equal in staff, facilities, equipment and supplies to the regular OE program
3. To provide quality instruction which leads to regular employment, a higher education program, or employment in a sheltered workshop
4. To provide students with exposure to, and training within, various occupational areas with an emphasis on special educational teaching techniques

Types of Program Activities: The student's instructional day consists of academic instruction and two and one-half hours of occupational education. Phase I (ages twelve to fourteen) provides industrial arts type training in five areas and emphasizes eye and hand coordination, five-finger dexterity, behavioral modification, and introduction to career awareness. Phase II (ages fourteen to sixteen) is a trimester exploratory experience where most students experience six to nine occupational areas (of an available total of sixteen) within a two- to three-year span. Phase III (ages sixteen to twenty-one) is designed for those students who have successfully completed Phase II, or who have been judged to have the proper attitude and behavior characteristics to pursue occupational training, but because of physical or mental limitations are not yet ready to enter into the regular occupational areas. Phase IV is based on the following resources outside the program including:

1. Regular occupational education
2. Work-study
3. Mainstreaming
4. Placement in the Association for the Help of Retarded Children
5. Placement in Skills Unlimited
6. Recommendation to the Office of Vocational Rehabilitation

HEARING HANDICAPPED

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HEARING HANDICAPPED

Description of Hearing Handicaps

Love. Hate. Guilt. Aspirations. Hopes. Dreams. Need for achievement. Positive self-concept. Fairly universal feelings that vocational teachers deal with every day. Feelings that are expressed by the rich, the poor, the gifted, and the handicapped. The goals of vocational teachers of the handicapped are the same as those for all students -- to assist students in attaining their fullest personal, social, academic, and vocational potential. There is no special psychology of handicapping conditions and no special psychology of disabilities. High school students who have handicaps are first and foremost adolescents -- with the same needs, aspirations, and dreams common to all adolescents. This is not to say that there are some students whose handicapping conditions may present obstacles to personal, social, academic, and vocational development. This is where the following information on the hearing impaired focuses.

Definition

Hearing handicapped students are those who are certified by licensed specialists as having hearing deficits requiring special classes or specialized education instruction suited to their needs.

The degree of hearing loss may range from mild to profound. The degree of loss in acuity may not be a reliable indicator of the degree to which the individual is handicapped. Individuals with mild to moderate hearing losses (in acuity for loudness) may exhibit learning patterns more characteristic of severely handicapped individuals due to losses in perception (understanding of what is heard).

Hearing impaired students exhibit hearing losses which interfere with their acquisition of the auditory skills necessary for the development of speech and language. Vocational teachers play a vital role in the identification and education of students with hearing problems. By referring to specialists those students who possibly have hearing losses and by helping identified hearing impaired students realize their vocational goals and objectives, teachers play a critical role in the futures of their students.

Hearing is perhaps one of the most important senses. Naturally any marked interferences with the hearing function will produce difficulties in communication which are proportional to the severity of the hearing impairment and are related to the time of onset.

Hard-of-hearing individuals have some ability to hear and understand the spoken word. Although some words are audible, it does not always mean they are clear. Sounds are not necessarily merely softer to hard-of-hearing individuals. Words may be garbled and distorted, making it difficult to understand verbal messages.

Deaf persons cannot hear or understand the spoken word. They may respond to loud noises or vibrations, but usually are unable to understand speech without visual cues. An important consideration when working with deaf students is the age of onset. Two classifications are distinguished:

-- congenitally deaf (one who is born deaf)
-- adventitiously deaf (one who is born with normal hearing, but later becomes deaf due to an illness or accident)

In order to understand hearing impaired students, it is necessary to consider the degree or range of the hearing loss of each student and the age at which the loss was incurred. This information will help teachers begin to learn more about their students' educational needs. Figure 1 gives an idea of the varying degrees of hearing losses.

If students were born deaf or became deaf before speech was learned, then they are classified as pre-lingually deaf. Since these students cannot hear the spoken word, it takes several years for them to learn to speak a language. Speech, if acquired, may be mechanical, monotonous, or high-pitched. The speech or vocabulary of deaf students does not necessarily indicate their strengths and capabilities, but it does mean that teachers need to become familiar with their students' methods of communication. It is important to realize the speech or communication levels of students in order to know its origin.

The second possibility, in terms of speech acquirement, is that students became deaf after the age of five; that is, after language and speech had already been learned. These students would be considered post-lingually deaf. Although hearing handicapped, their speech sounds more like that of those who can hear. This does not mean that students who are post-lingually deaf will communicate only by speaking, but it will explain why language and speech patterns differ among those defined as "deaf."

Another important factor is whether the hearing loss is hereditary or caused by accident or illness. Usually, individuals who are born deaf do not have any other complications of the central nervous system. Deafness does not imply brain damage, for deafness is caused by malfunctioning in the hearing process which may affect other functions such as speech. The fact that some individuals cannot communicate as clearly as those with normal hearing does not mean that they are brain damaged. It is essential to keep this in mind when teaching hearing impaired students. However, if loss of hearing occurred because of an accident or illness, there might be some degree of damage to the nervous system which may affect memory, comprehension, and judgment. These additional impairments, combined with a hearing loss, could further hinder learning potential.

Characteristics

Vocational students with worried facial expressions as they are spoken to could be among many students who have hearing impairments. Other noticeable symptoms of hearing losses might be any of the following:

1. Failure to pay attention when casually spoken to
2. Incorrect answers to simple questions
3. Better "hearing" when watching the speaker's face
4. Functioning in school is below that of potential ability
5. Frequent requests to have words or sentences repeated
6. Frequent earaches and running ears

Figure 1
Relationship of Degree of Impairment
to Educational Needs

	Average of the Speech Frequencies in Better Ear*	Effect of Hearing Loss on the Understanding of Language and Speech	Educational Needs and Programs
Slight Hearing Loss	27 to 40 dB (ISO) 20 dB or less	-May have difficulty hearing faint or distant speech -May experience some difficulty with the language arts subjects -Generally unnoticed	-May need attention to vocabulary development -May benefit from hearing aid -Needs favorable seating and lighting -May need lipreading instructions -May need speech therapy
Mild Hearing Loss	41 to 55 dB (ISO) 20-40 dB	-Understands conversational speech at a distance of 3-5 feet (face to face) -May miss as much as 50 percent of class discussions if voices are faint or not in line of vision -May have slightly limited vocabulary -Difficulty when tired or inattentive, in distant theater seats, in noise of general conversation	-Individual hearing aid by evaluation and training in its use -Favorable seating and possible special class placement -Attention to vocabulary and reading -Lipreading instruction -Speech conversation and correction, if indicated
Moderate Hearing Loss	56 to 70 dB (ISO) 46-60 dB	-Conversation must be loud to be understood -Will have increased difficulty in group discussions -Is likely to have defective speech -Is likely to be deficient in language usage and comprehension -Will have limited vocabulary	-Special help in language skills, vocabulary development, usage, reading, writing, grammar, etc. -Individual hearing aid by evaluation and auditory training -Lipreading instruction -Speech conversation and correction -Attention to auditory and visual situations at all times
Severe Hearing Loss	71 to 90 dB (ISO) 60-80 dB	-May hear loud voices about 1 ft. from ear to moderate voice several inches from ear -May be able to identify environmental sounds such as sirens and airplanes -May be able to discriminate vowels but not all consonants -Speech and language defective and likely to deteriorate	-Emphasis on language skills, concept development, lipreading and speech -Program needs specialized supervision and comprehensive supporting services -Individual hearing aid by evaluation -Auditory training with individual and group aids
Profound Hearing Loss	91 dB or more (ISO) Over 80 dB	-May hear some loud sounds about 1 inch from ear but is aware of vibrations more than tonal pattern -Relies on vision rather than hearing as primary avenue for communication -Speech and language defective and likely to deteriorate	-Emphasis on all language skills, concept development, lipreading and speech -Program needs specialized supervision and comprehensive supporting services -Continuous appraisal of needs in regard to oral and manual communication -Auditory training with group and individual aids

*Note: First decibel rating is based on current ISO standard (International Standard Organization). Second decibel rating is based on information from U.S. Department of Labor, Manpower Administration, 1971 (Kirk)

7. Frequent colds
8. Frequent upper respiratory infections like sinusitis and tonsilitis
9. Allergies similar to hay fever
10. Behavior problems
11. Non-verbal score on intelligence tests exceeds the verbal
12. Vocabulary development is below that expected for the student's chronological age (The Peabody Picture Vocabulary Test can be used to assess this if no score is available.)
13. May be successful in mathematics computation processes but is deficient in most other areas of academic work
14. Omission and substitution of sounds; dropping final consonants
15. Voice defects: inadequate control of pitch and volume
16. Unusual head positions such as turning one ear towards speaker
17. Frequent use of "What?"
18. Social or emotional difficulties

The following information should help vocational teachers in understanding the needs of hearing impaired students. These needs arise out of the three general considerations listed below.

1. Students with hearing losses are affected in their development in various ways, but chiefly in language and speech.
2. Two groupings are made for educational purposes: (a) Hard-of-hearing students are classified as having slight losses, mild losses, and marked losses; they are educated through auditory processes; (b) Deaf students are classified as having extreme losses; they are educated primarily through sense modalities other than the auditory one.
3. The development of speech and language is dependent upon (a) the degree of hearing loss, (b) the age at onset of loss, and (c) intelligence.

Deaf and Hard-of-Hearing

1. Hard-of-hearing students are generally educated in regular grades. Itinerant teachers assist them in the specific areas of using a hearing aid, auditory training, speech reading, and speech training. Deaf students are generally educated in special classes or schools for the deaf.
2. For educational purposes, deaf students are those who were born without hearing or who lost their hearing before they acquired speech and language. Students who lose their hearing after the acquisition of speech and language are classified as deafened.
3. Deaf students are educated either in public or private residential schools or in day schools that are usually part of the public school system.
4. Three interrelated communication approaches are currently in use for the education of the deaf: the oral approach, the combined approach (finger spelling and oral), and the simultaneous approach (oral communication, finger spelling, and the language of signs).
5. On nonverbal intelligence tests, the deaf range from mentally retarded to superior, with the average score equal to that of unimpaired students.
6. Intelligence, degree of hearing loss, and age at onset of deafness are all related to the educational progress of deaf students.
7. The greatest handicap created by a hearing loss is the difficulty in developing speech and language with which to communicate with others.

8. The curriculum for deaf students differs from that followed with hearing students and concentrates on developing speech, speech reading, reading, and language, as well as the curriculum followed for hearing students.
9. Because of the handicap in speech and language, deaf students may be from two to five years behind in educational subjects.
10. In adulthood the deaf are employed in all types of work not requiring hearing, from professional to unskilled labor. The majority hold semiskilled and skilled jobs, and are considered satisfactory to excellent employees.

Learning a vocational skill is most important for hearing impaired students. In high school, classroom work includes English, reading, and material related to other courses being taught. Curriculum often includes on-the-job training.

Let's Compare!

At this point it is important to look at deaf students as compared to hearing students at various ages.

Age	Hearing Student	Deaf Student
18 months	25-word vocabulary	No vocabulary
	Understands many more words	No understanding
2-3 years	Understands verbal directions	Vocabulary of a few words
	Uses short sentences	Yelling or screeching to express desires and wants
	Asks questions	
	Relates experiences	
	Understands adults well	
	500-word vocabulary	
3-4 years	Asks questions	First real language development
	Uses compound and complex sentences	Some single words
	Makes long sentences	Uses gestures
	Loves new words	Points
	Uses "what," "where," and "when" correctly	Facial expressions
	1,000-word vocabulary	Nodding and shaking head for "yes" and "no"

4–5 years	Uses "why" and "how" Likes new and big words Understands and uses past and future tenses well 2,000-word vocabulary	Still not enough intelligible speech to make wants known Gestures used with single words Likes to act out

Unique Needs of Students with Hearing Handicaps

It is not enough to simply fit students with hearing aids and expect them to learn how to talk. The family and those in the field of education need to be sensitive to needs and feelings and must learn how to communicate with the students in special ways.

In addition to regular academics, hearing impaired students should be given supportive services to enhance their communication methods. These might include auditory training, lipreading, and, in some cases where the hearing loss is so severe that oral communication cannot be learned, instruction in the use of sign language.

Special attention should be given to the psychological well-being of hearing impaired individuals. Steps should be taken to ensure that children will be able to cope with their communication handicaps.

Whenever needed, psychological services should be provided by psychiatrists, psychologists, or counselors for the deaf. Psychological support may also be needed in the management of the behavior of hearing impaired students. The limited communicative ability of hearing impaired students may create difficulties in relations with others.

Another important aspect in dealing with hearing handicapped students should be the management team approach. Participants in the management team may include audiologists; special and vocational teachers and administrators; mental health professionals; ear, nose and throat doctors; and speech and language pathologists. One individual should be responsible for coordinating the services of the professionals involved.

Having discussed the differences which exist among hearing impaired students, the next area of concern will be communication with hearing handicapped students. Methods will be explored which will assist teachers in developing relationships with their students which facilitate learning. The basic principle of building good rapport with students and finding out the best method for communication cannot be overemphasized. This section will offer ideas on how students learn best and how teachers can give their students the feeling that they are genuinely concerned about their welfares.

The various methods used by hearing impaired students for communication could center on the following areas or a combination of them: sign language, speech reading (lip reading), speech using a hearing aid, and writing.

An important point to remember when communicating with hearing handicapped students is that "body language" can sometimes speak louder than "spoken" words. People communicate with facial expressions, gestures, and body movements, and hearing handicapped students are very adept at watching for various visual cues or for the message being conveyed. Teachers should also be alert as to the facial and body messages that students are conveying. Do they look confused after a class explanation? Do they seem tense or nervous about class activities? This kind of awareness as to the needs of both hearing impaired and hearing students is important in aiding effective learning.

Sign Language

One of the primary ways that some deaf individuals may communicate is through manual communication, called sign language. The most prevalent language used by the deaf is American Sign Language (Ameslan or ASL). It is comprised of well-defined hand and arm movements which represent concepts. Ameslan is considered the language of the deaf, with its own conceptual structure and meaning. Another element of this manual form of communication is finger spelling. By using hand shapes indicating each letter of the alphabet, deaf individuals spell letter-by-letter some of the words in their vocabulary. A second example of a form of sign language is Singlish (Signed English), in which students sign exact English. The message signed in this instance would be in complete sentences. Finger spelling is also used in this form of sign language.

Speech Reading

Students who have been trained in speech reading have the capability to comprehend and link together lip movements, facial expressions, and general body movements in order to obtain information. The focal point of this skill is based on visual attention and concentration on "reading" what is being said. This is a very difficult task for a majority of the hearing impaired since only 30-40 percent of the English language can be seen on the lips of the speaker.

Speech

A majority of deaf people consider English a second language. Imagine watching a German film with the sound turned off while trying to learn this language. This is similar to what deaf people, having never heard the sound of words or the pitch of a voice, must experience when trying to learn how to speak. Deaf persons, since they cannot hear themselves speak, are unable to automatically control pitch or tone. If deaf students communicate by speech, it should be encouraged that they do so in class. This will enhance their educational and personal development.

Writing

Writing is a method of communication which can be very time-consuming, and it usually involves one-to-one interaction. If deaf students only sign and have difficulty speech reading, one method of communication consists of writing notes. Deaf students may write in incomplete sentences, or their grammar may not be up to the level of hearing students, but once again these tendencies do not indicate intellectual ability or potential. Sometimes, writing key words on a sheet of paper helps to facilitate a conversation.

It should also be emphasized that some deaf students may have an advanced vocabulary or writing skills comparable to hearing students. Early childhood experiences in the home, as well as formal education, play important roles in the levels of skills of deaf students. Various methods of communication can be used individually or simultaneously. Two of these methods are total communication and aural/oral communication.

Total Communication

Total communication involves the use of speech, signs, finger spelling, speech reading, and facial expressions. Deaf individuals using this mode of communication are encouraged to use all means of communication, including speech while signing.

Aural/Oral Communication

Aural/oral communication involves the use of speech, speech reading, and auditory discrimination when communicating. Deaf students trained in this mode of communication will typically not use sign language or finger spelling.

Hearing Aid

A hearing aid is a device worn by individuals experiencing hearing losses, regardless of the degree of impairment. It is essentially an amplifying system that increases the volume of sound in the user's ear. The system begins with a pickup microphone that responds in proportion to the sound that strikes it. This sound impulse triggers a change of electrical variations which are then amplified. These impulses are translated by loud speaker components into physical movements that are transmitted to the listener's ear via a custom fitted mold, called an air conductive aid. (Maloney and Weisberger, 1977)

There are two types of hearing aids. The one described above is worn in the ear. The other type is worn on the mastoid bone (temporal bone behind the ear), which is called a bone conductive aid.

As stated earlier, a hearing aid does not correct the hearing loss. These particular aids only amplify sound to enhance auditory skills. If hearing impaired students are exposed to excessive noise, for example in a machine shop, they may turn down their hearing aids, since all noises are amplified.

When teachers are working with students who are wearing hearing aids, they should remember to stand within close range when talking. Hearing aids have a limited range of pick-up. Unnecessary background noises should be limited as much as possible; hearing aids amplify all sound indiscriminately.

When talking with hard-of-hearing students, teachers should speak slowly in order to give them time to absorb the information. Teachers should face the students directly and make certain that they have their attention before speaking. Teachers should not exaggerate their pronunciation as this makes speech reading difficult. If some students have better hearing in one ear than another, they should be seated so that the better ear is directed toward the conversation.

Working With Interpreters

Interpreters are probably the most effective means of communication between hearing impaired students and vocational teachers. In essence, interpreters "speak" the "language" of the hearing impaired, and can interpret the language to others.

There are two methods of interpretation. Manual interpreters are those who have been trained to change the spoken word into the language of signs and vice versa. Oral interpreters are trained to present spoken words (with or without the use of their voices) by using natural lip movements for those situations when increased visibility is needed for individuals who speech read. In the past, interpreters were generally hearing children of deaf adults. With the passage of federal laws for the handicapped and awareness of the needs of the hearing impaired, there has been a movement to train more individuals as interpreters. This is evidenced at Lynhaven Career Center in Richland School District One in Columbia, S. C., where approximately twenty vocational teachers and aides who teach or will teach hearing impaired students have successfully completed a course in sign language. This was a first for the district in the area of vocational education and was received with much enthusiasm.

Each state has a local Registry of Interpreters for the Deaf. The state vocational rehabilitation office can be of assistance in locating interpreters from this register. The national office may also be contacted for assistance.

Registry of Interpreters for the Deaf, Inc.
P. O. Box 1339
Washington, D. C. 20013

The main reason for having interpreters in the classroom is to facilitate communication between students and vocational teachers. Interpreters are not there to teach classes nor to criticize teaching; they are there to assist in the communication process between teachers and hearing impaired students. It is important that teachers remember that when they are instructing deaf students, they should speak to the students directly, as if interpreters were not there. Deaf students should not be instructed as if they were the third party involved.

The following information should be beneficial in establishing a good working relationship with interpreters.

1. Interpreters are in the classroom to help, but they should not be expected to take attendance, teach class materials, or see that students are in class.
2. Interpreters will need to adjust to the teachers' rates of instruction, and at times it will be necessary for teachers to adjust to the rates of the interpreters. Usually, interpreters will ask teachers either to stop momentarily and repeat or to slow down.
3. Technical or unusual words should be spelled for interpreters, as many technical words will need to be finger spelled. Jotting down these words on the blackboard or on a handout can help hearing impaired students in understanding technical terms and will also assist interpreters.

4. Interpreters are ethically bound to interpret everything that teachers say in class. If some changes in teaching or other arrangements concerning the impaired students need to be discussed with interpreters, it is best to do so alone.
5. Typically, interpreters will stand to the side of teachers. This enables students to maintain eye contact with both individuals and helps in establishing a better student-teacher rapport. (Gallaudet College, n.d.)
6. When using overhead projectors, slides, video tapes, and/or films, it is sometimes necessary to reduce or turn off classroom lighting. In such situations, it is important to provide a small lamp to focus on interpreters while discussion or explanation takes place. (Gallaudet College, n.d.)
7. Wherever interpreters stand in the classroom, they must be in good lighting so that hearing impaired students can see.

Now that some points on establishing a good relationship with interpreters have been covered, some important considerations for establishing good teacher-student relationships through interpreters will be explored.

1. It is important that teachers establish as much communication as possible with students without the aid of interpreters. Interpreters should not be depended upon entirely for interacting with students. One of the goals in vocational education is to assist students in developing independence, especially for employment purposes. Teachers need to assist hearing impaired students in their communication with hearing students so that they will be prepared for employment without depending on interpreters.
2. When hearing impaired students have done well in class, tell them directly. All information should be directed to hearing impaired students (for example, a change of class or field trip) in order that interpreters do not become a go-between for teachers and students.
3. If group discussions are being held, seating should be arranged in a semicircle, if possible. This allows hearing impaired students to see who is talking. It is important that the class realize that only one person can talk at a time. This will help facilitate participation by hearing handicapped students. Talking in turn is helpful even if the group cannot form a semicircle because hearing impaired students will be able to follow who is talking and what is being said.
4. There may be times when hearing impaired students wish to speak with their teachers in private. These conversations should take place before or after class. Hearing impaired students should decide whether an interpreter should be present during this conference, and if so, whether it is the regular interpreter or another available interpreter. Interpreters are always neutral parties. However, at times hearing impaired students may wish to have someone interpret who may not know them quite as well as their regular interpreter. It is important to be sensitive to the needs of hearing handicapped students and to let them indicate who they would like to have present during a private discussion.

TTY

Deaf individuals are capable of communicating by telephone through a special device called a TTY or a telephone/teletype communications system. A TTY has a keyboard like that of a typewriter and a printout sheet for typing and receiving messages. Each key has an electronic impulse which the TTY transforms into sound and sends over the telephone lines. On the top of this machine is a coupling device for plugging in a regular telephone receiver and typing out a message. On the

receiving end, a similar unit receives the message and translates the tones to a written message. The TTY plugs into a standard wall socket and needs no special installment. (Vanstone, 1979, p. 13) Several styles are available featuring different methods for receiving the printed message. The TTY is predominantly used by deaf consumers and affiliated service agencies.

Methods for Evaluating Performance

How well hearing impaired students learn material is a critical concern. The ways in which vocational teachers can communicate instructional materials that are needed by students to complete the required coursework have been examined. But what about the ability of students to relay to teachers the information they have learned, for example, in a testing situation? Evaluating the performances of hearing impaired students should be done fairly and honestly, using the same standards as for other students in the classroom.

What might change is the manner in which hearing impaired students are evaluated. If students are able to complete a task, but have modified the equipment to do so, evaluation should be at the same skill level as for students working without the equipment modification. The modification is only there to enhance learning; it is not a "crutch" if it allows students to perform the needed tasks to complete the course and prepare them for employment.

Two examples follow that may be helpful to vocational teachers in testing situations. The use of interpreters has enabled teachers and students to work out a fair means of determining their performances.

Sullivan (1979) discusses the following test situations.

A deaf student in a one-year mechanical drafting course was able to perform the tasks necessary to complete the drawing class. However, his ability to take written exams was poor. The teacher worked out an agreement with the student in which the student handed in extra drawing assignments which demonstrated knowledge of the materials covered by the written exam.

In another instance, Ms. Sullivan worked with the teacher of a deaf student and rewrote the examination so the student could understand the meaning of each question and be able to respond appropriately.

The first example shows that by using a visual or hands-on technique by handing in extra assignments instead of taking a written exam, students are able to successfully complete courses. The second example illustrates that interpreters can assist students, who may have varying levels of verbal and/or language skills in comparison to the rest of the class, in completing written exams through some modifications.

The importance of evaluating students is to determine whether they have learned the materials presented in class. Perhaps hearing impaired students can take written exams, but the concepts or ideas stated are inadequately phrased. The critical point to consider, however, is whether the techniques or steps are correct even if the sentence structure is poor. For example, the teacher of a welding class is testing students on safety procedures in the shop. A deaf student who took the test appears to know all the steps in safely handling equipment and good shop behavior; however, his sentences are incomplete and have several misspelled words.

It is helpful to determine whether good language usage is necessary for successful completion of the course and in the actual job situation. If knowing the important points and procedures for a job is more vital than clearly stating them in writing, hearing impaired students may have the potential to complete the course successfully. Evaluating the language skills necessary for employment and determining the level of language skills of hearing impaired students are two critical considerations when evaluating curriculum materials and determining the best testing methods.

Felt Boards Developed for Instruction in Electricity

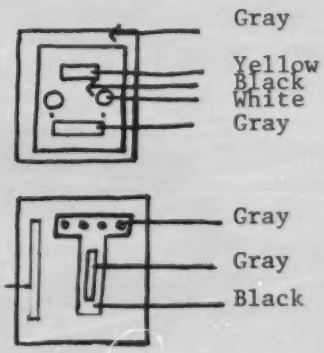
(Dorothy Osborne, Averill Career Opportunities Center, Saginaw, Michigan)
Directions:

These 18" x 24" felt boards are used to teach electricity students to wire for either a single pole switch and light or for a three-way switch and light with feed either at the light or at the switch. Either a circuit breaker or fuse box is used.

Black and red yarn are used for hot wires, white for neutral. The yarn is laid from terminal to terminal. There is a 6" x 9" envelope on the back in which the yarn is stored. Also in the envelope are diagrams on 3" x 5" cards showing methods of wiring. One correct way is shown on a single card. This makes it possible for students to learn by themselves. One student's "wiring" may also be monitored by another student or teacher. If incorrect, it may be wiped off in a split second for another try. This reduces the time consumed in learning. When the correct wiring is demonstrated on the board, the student is ready to do the real wiring in the lab.

The board is lightweight, portable, and easy to work on. Materials needed:

1. Pressed hardboard, 18" x 24" x 1/4".
2. Cover with light blue felt (to the edge).
3. Apply a border of 5/8" varnished screen door molding.
4. Cut bulbs of white felt.
5. Cut the metal base of the bulb out of gray felt.
6. Right side bulb terminals are yellow felt.
7. Left side bulb terminals are gray felt.
8. Outlets are white felt, gray left side terminals and openings in outlets, yellow right side terminals.
9. Switch is dark gold felt with yellow terminals and black strip.
10. Fuse box is gray.
11. Circuit breaker is gray.
12. 6" x 9" manilla envelope glued to the back of the board.
13. Black, red, and white yarn used for wires.



Directions for Developing Instructional Kits
(Dorothy Osborne, Averill Cancer Opportunities Center, Saginaw, Michigan)

Instructional kits can be made for a wide variety of classes. There can be kits for building construction, welding, electricity, micrometer reading, fractions, etc. In each kit at the Career Opportunities Center are folders or envelopes which contain materials on a specific subject. For example, teacher-made materials in a building construction kit may include a folder on framing a house. An electricity kit may teach series circuitry as one of many separate concepts.

These materials are brief and concise. They are simple, often in color, and many are manipulative. Most material is printed by hand and is larger than type.

Because vocational students should be concerned with only the absolutely necessary reading and math skills, these kits present only one concept at a time and use only the necessary reading and math skills. Students are less threatened by these materials than by books, which can be overwhelming. Kits allow for hearing impaired students to follow all of the steps in sequence and do not force them to observe two things at once. Students are encouraged with small success, and success builds on success.

Note-Takers

Note-takers are used in the classroom to assist hearing impaired students in watching the materials being presented by teachers and/or interpreters. It is difficult for hearing impaired students to watch teachers and to take notes at the same time. Several approaches can be taken to establish note-takers in the class. This service could be worked out by guidance or support services departments in the schools. However, it is important to be aware of the responsibilities of note-takers in order to monitor the effectiveness of this service in the classroom.

Sullivan (1979) discusses the role of teachers in using volunteer note-takers in the classroom. It is usually a good idea to select students who are doing average class work since their notes are usually more complete than those of brighter students who do not need as many notes as deaf students. A few days after the students have been selected, deaf students, interpreters, teachers, and note-takers should meet briefly to evaluate how the note-taking has been going and whether the deaf students are benefiting from these notes. This provides an opportunity to see if the class notes are adequate.

Copies of the notes can be made by two methods. The first is by a specially made carbon paper developed through the National Technical Institute for the Deaf in Rochester, New York. It can be purchased through The Bookstore, Rochester Institute of Technology, One Lomb Memorial Drive, Rochester, New York 14623. Hearing impaired students who use this paper will provide it to the note-takers, who slip it under their notebooks while taking notes, and then give the notes to the hearing impaired students after class. Notes should be given to hearing impaired students as soon as possible to enable them to review what has happened in class. A three-day delay is too long for hearing handicapped students to wait to receive class notes.

Fordyce (1979), Coordinator for the Handicapped Student Services of the Charles Stewart Mott Community College, Flint, Michigan, describes procedures for recruiting and training note-takers. Bulletins and posters should be placed around campus requesting volunteers as note-takers for special needs students. Typically, work-study students are recruited for the position. Interested students who are interviewed and hired will then attend a session on note-taking before classes begin. Ms. Fordyce suggests that another group meeting be held a few weeks into the semester to enable note-takers and those students who receive the notes to discuss any problems. The group setting provides an atmosphere of open discussion and is not threatening to note-takers or hearing impaired students. Staff members should monitor note-takers throughout the semester. Note-takers should be paid the minimum wage, although other rewards could be substituted when this is not possible.

The following guidelines are given to students training to become note-takers for hearing impaired students.

1. Make copies of class notes for each student, yourself, and the tutor.
2. Write legibly.
3. Date the first page of notes for each class period. Number each page.
4. Record all information about assignments and the due dates.
5. Elaborate as much as possible within the notes, particularly on definitions of unfamilar key words, phrases, and difficult concepts.
6. Write in sufficient detail so that the notes have meaning without needing additional explanations.
7. Organize the content of the notes in logical sequence. Use headings and subheadings where possible.
8. Identify and record all principal points.
9. Record all references and special notices accurately and in detail.
10. Record secondary points.
11. If the point being made by the teacher is not clear, ask for clarification. It is also unlikely that hearing impaired students understand.
12. Ask hearing impaired students, tutors, or supportive services personnel how to make notes more useful.
13. Remember that hearing impaired students have no permanent record of the lecture without notes. Therefore, notes should be taken in more detail than if they were notes being shared with hearing impaired students.

Many times deaf students will take the initiative to find fellow students to take notes for them. The role of vocational teachers is to assist hearing impaired students if they are getting inadequate class notes. Teachers can help the students by referring them to resources in the school who organize note-takers, or by talking with students in the class, in the presence of the hearing impaired students, about note-taking.

The ultimate goal in note-taking is to enable hearing impaired students to have materials which can be referred to after each class. The role of teachers is to assist in this process of effective communication by insuring that students have a means of receiving verbal instructions. The ways that teachers present lectures have obvious effects on note-taking. Teachers should present the information in a logical and sequential manner. When possible, they should provide an outline (printed either on the blackboard or on an overhead transparency) of the points to be covered in the lecture.

Tutors

To assist hearing impaired students in understanding classroom materials, tutoring programs have been established as a support service. For this service to be meaningful for hearing impaired students, close communication between tutors and teachers is essential. Hearing handicapped students could refer themselves for tutoring, or teachers could suggest areas in which tutoring would be beneficial.

Here are some guidelines used for tutors at the hearing impaired program at Stewart Mott Community College in Flint, Michigan. These suggestions will provide teachers with an idea of their relationship to tutors, as well as student responsibilities.

1. Tutors should make it a point to consult with teachers to find out what the problem areas of students are and then use this information as the main emphasis of the tutoring session.

2. Tutors should encourage students to come to their tutorial sessions with questions and problem areas already determined. If students have doubts as to exactly what their problem areas are, this should be determined by tutors and students during the first few tutoring sessions.
3. It should be made clear to students, from the first tutoring session through the last, that it is not the responsibility of tutors to write, do homework, or do any in-depth study for students. This is the students' responsibility.
4. The main emphasis of tutoring sessions should be on additional explanations of unclear concepts and new vocabulary, or on test reviews.

Tutoring Services in General

Tutoring is a supportive service offered to students to help them with coursework. Communication between tutors and teachers needs to be established so that tutors know what material will be covered and what to reinforce during sessions with hearing impaired students. In most schools, interpreters are also tutors. Sometimes a special department is designated for tutoring services, with individuals hired to work only as tutors. Additional possibilities for tutoring services may be special education teachers, resource room teachers, or teacher's aides.

The Buddy System

The buddy system can be incorporated in the classroom through voluntary student cooperation. Generally this system is developed for hard-of-hearing students who need additional support to insure that they have heard the teacher or other classmates correctly. In the buddy system students are assigned to sit next to hearing impaired students. Buddies write down key words of discussions, share notes during lectures, or repeat important information such as announcements of field trips, test dates, or assignments.

The difference between the buddy system and note-takers or interpreters is that the system is informal and is used as an aid to fill in any information gaps hard-of-hearing students may experience. This support is not intended to help students complete the course by itself, but it can be useful in insuring that hard-of-hearing students have assistance in case they cannot hear part of a verbal message.

Methods for Reinforcing Learning Through Visual Cues

In vocational education, students need to learn the procedures or steps involved in the tasks they study. For example, students in a janitorial class need to know the steps involved in cleaning a restroom -- how to measure chemicals, how to find necessary equipment, where to start cleaning, and how to clean up the equipment after completing the job. It is essential, in most cases, for students to learn the terminology associated with their fields as well as various procedures necessary for obtaining employment.

In teaching hearing impaired students the skills of their vocation, two critical factors need to be considered when discussing curriculum materials -- the language used and the reading level of the coursework. For deaf students, English is for all practical purposes a second language. This is especially true for those individuals born deaf because they have never heard a language with its grammar, sentence structure, and word usage. This must all be learned through years of practice.

What is natural for hearing individuals who depend heavily on auditory skills in learning a language can be slow and difficult for deaf students. When evaluating the reading and writing abilities of hearing impaired students, teachers should recognize the fact that most of these students will not be at the same level in vocabulary development and reading skills as hearing students. However, this is not always the case -- some students become deaf after they have acquired language, some are hard-of-hearing. Regardless of language acquisition, hearing impaired students will depend heavily on visual cues since their auditory skills are weakened.

This dependence on visual cues means that curriculum materials need to be as visual as possible. Also, technical terminology needs to be clearly defined before each procedure or step can be learned. In the case of deaf students working with interpreters, the language of the curriculum materials will be translated into concepts that the students will understand. Therefore, interpreters will greatly facilitate the students' process of receiving and understanding course material. There are additional materials which can be used to reinforce learning through more visual cues where written instructions are minimal, and a strong dependence on pictures is used. Also, students should be able to have hands-on experiences in order to understand the methods being taught.

Written Curriculum

The following workbook was developed by the New Jersey Department of Education, Division of Vocational Education and Career Preparation. The author is James Carrick, horticulture instructor for the Marie H. Katzenback School for the Deaf. The workbook is entitled **Planting Growing Caring.** The text was prepared for deaf students enrolled in an ornamental horticulture program. There are several important components of this curriculum that can be applied to any course: (1) the objective of each chapter is clearly stated, (2) relevant terms are defined before each step is learned, and (3) pictures are used to reinforce written statements.

Flipcharts

Ryan (1980), curriculum developer for Project Serve, Vocational-Technical Institute, White Bear Lake, Minnesota, describes the flipcharts they have developed, and how they could be used in the classroom.

Flipcharts can be very helpful to vocational teachers in reinforcing the instructional materials being taught. Essentially, the flipcharts developed by Project Serve are in booklet form and each chart consists of a picture illustrating a procedure to be learned. Instructions on how to do the steps are written below each picture. The written instructions are very clear and concise; however, the main emphasis is on the picture in order to allow students a better understanding of the procedure.

Flipcharts have been developed in such areas as auto parts, dental assisting lab, food service, cosmetology, and machine technology. These are just a few examples of areas where flipcharts have been developed and could be used.

Hands-On Materials

Osborne (1979), math consultant for the Averill Career Opportunities Center in Saginaw, Michigan, created two felt boards for an electricity class. The boards cover a single pole switch and three-way switches, as described earlier. Felt boards are an excellent aid for developing a hands-on understanding of a process. Hands-on experiences are also crucial in helping hearing impaired students to learn concepts and techniques. These exercises assist students in learning electrical wiring before they work with actual circuit boards.

Ms. Osborne has also developed kits which reinforce the vocabulary and/or math needed to learn a concept. Hearing impaired students working with these kits can review materials covered in class by using visual and tactile cues. These kits can be developed for a variety of vocational areas to give students further practice with the curriculum material.

Equipment Modifications

Several devices have been designed for hearing impaired students which allow them to work effectively and safely with equipment or machinery. The main objectives of machinery modifications center either on giving hearing handicapped students visual cues to assist in operating equipment or devices to amplify sound (for example, an amplifier on a telephone receiver). Lights may be installed on a machine to indicate to hearing impaired students that the machine is in operation.

Attachments for machinery can be developed using materials that may already be in the classroom or that can be bought through special equipment catalogs. Sources for funds to purchase these attachments vary among school districts. Some schools have state or federal funds set aside for such purchases. Two good sources for information about attachments for equipment are special education departments or the Department of Vocational Rehabilitation.

Examples of equiment and machinery modifications which have been made by teachers and support services staff for hearing impaired students follow.

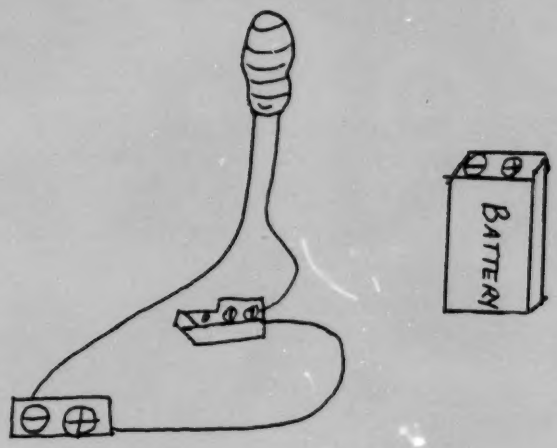
Typewriter Margin Indicator

Garness (1979), head of the business education program at Western Wisconsin Technical Institute, LaCrosse, Wisconsin, describes his design for attaching lights to standard typewriters. His plan has helped hearing impaired students successfully complete his course.

Description: This device (see illustration) helps hearing impaired students determine when the right margin is reached on an I.B.M. Selectric typewriter. A switch is mounted on the frame of the typewriter, and when the right margin bell rings, the light goes on. For a more detailed description of how this device is installed, consult the October 1979 edition of **Personal Communication** listed in the bibliography.

Materials Needed:

- Clip-on clamp holder
- 9-volt battery
- 9-volt battery connector
- Switch
- Wire
- Metal hanger strap
- Bulb - #47 lamp
- Bolt and screw



Interpreting Light for Use During Films and Filmstrips

Sullivan (1979), interpreter for Western Wisconsin Technical Institute in LaCrosse, Wisconsin suggested the following lighting arrangements when films or filmstrips are being shown in class.

During the showing of films or filmstrips, interpreters can sign to deaf students the material being covered. Since the lights are turned off during this time, small lamps can be used to illuminate the hands of interpreters. The light does not distract other students from viewing the film. If a small lamp is not available, a large flashlight works just as well.

Telephone Amplifier

Brownson (1979), Special Needs Coordinator for the School District of the City of Holland, Holland, Michigan, arranged for a telephone attachment for a hard-of-hearing high school student who wanted training in a receptionist course. However, to complete this training, the student needed to converse on the telephone, and this required an attachment for the receiver. Money was made available through a Special Needs Fund to rent an amplifier, enabling the student to hear on the telephone by adjusting the volume control. Ms. Brownson stated that the hard-of-hearing student was able to complete the course successfully due to the amplifier. The amplifier used in this particular instance was rented through the telephone company.

Basic Courtesies

Listed below are common courtesies which should be used when teachers interact with hearing impaired students. These points will help supplement what has been covered previously or perhaps serve as reminders when communicating with hearing handicapped students.

1. Have the students' attention before speaking. Deaf students cannot hear a call to attention and they may need a tap on the shoulder, wave, or other signal to gain their attention.
2. Speak slowly and clearly, pronouncing each word, but without exaggerating or overpronouncing. Exaggeration and over-emphasis distort lip movements, making speech reading more difficult. Speak clearly without force or tension. Use short rather than long sentences.
3. Look directly at the students while talking. Faces should not be covered with hands or books.
4. Do not stand with backs to the students while talking or explaining something on the blackboard.

5. Try not to move around the room while carrying on a discussion. It is best for teachers to select a place in the room where they can be easily seen by hearing impaired students.
6. Do not stand in front of windows while speaking. The light will shine in the students' eyes, making it difficult for them to see. The lights should shine on the teacher's face and not in the students' eyes.
7. When speaking to hearing impaired students, try to maintain eye contact, even in the presence of interpreters. Eye contact establishes a feeling of direct communication.
8. Try to rephrase a thought rather than repeating the same words. Sometimes a particular combination of words is difficult to speech read, so repetition of the same phrase may be frustrating to students if they cannot understand. Always use complete sentences when talking to hearing impaired students, and never repeat only one or two words.
9. Hearing impaired students must take in a majority of information through visual cues; thus, they may tire more quickly than other students. Check occasionally to see if students are still understanding the material. Nods of the head should not be taken as confirmation. Often hearing impaired students will say they understand when they really do not. Asking a few quick questions regarding the material covered is a good way to see if, indeed, students are understanding the course work. Teachers may witness periods of inattentiveness due to periodic rests from fatigue.
10. Encourage hearing impaired students to read ahead on class material in order to become more familiar with topics that will be discussed in class.
11. Keep facial expressions and gestures appropriate and consistent with the verbal message being conveyed.
12. Attempt to keep the noise level down in the classroom (as much as possible) to allow hearing impaired students maximum use of their auditory skills. This is especially important during those times when announcements or assignments are being given. Any important information should be written out to insure that hearing impaired students receive the information.

Summary

Vocational teachers will be concerned primarily with sharing knowledge with students in order to prepare them for the world of work or for further training. Students can be instructed through various teaching modes. Teachers might, for example, lecture on a particular subject and then demonstrate a point through a hands-on experience. Teachers can incorporate frequent visual aids such as filmstrips, overhead projectors, or blackboard work into presentations. Whatever method is chosen, it is important that teaching style be assessed from time to time to determine effectiveness. Evaluation of teaching style will be a major consideration, especially when working with hearing impaired students. This does not necessarily mean changing or altering the quality or quantity of material presented. However, it does mean giving thought to the ways in which hearing impaired students can receive messages.

The approach for presenting materials should be built upon the methods of effective communication previously discussed. By developing techniques for interacting with hearing impaired students (for example, working with deaf students and their interpreters), the learning of these students will be enhanced. Yet, another vital aspect in the process of teaching hearing impaired students is the determination of those teaching modes which will be used in presenting material.

Rather than only presenting the subject verbally, perhaps more visual cues should be used with explanations. Teachers might incorporate more hands-on experiences into lectures or give more handouts to the class to reinforce technical terms which will be discussed. This kind of planning can assist hearing impaired students enormously in completing class requirements.

What has been discussed in this section are curriculum modifications or reasonable accommodations which enable hearing handicapped students to complete a course successfully. The following section will review actual strategies in use by vocational teachers who have had hearing impaired students in their classrooms. These methods will give a clearer picture of what effective techniques other teachers or support service staff members have developed for reaching hearing impaired students.

Helping the Hearing Impaired in Vocational Classes

Vocational teachers can assist hard-of-hearing students in the following ways.

1. Trust them as nearly like hearing students as circumstances permit.
2. Do not worry about the attitudes of students toward hearing handicapped children. Be "matter of fact" and they will take their cues from you.
3. Do not assume that hearing losses account for every minor difficulty pupils might experience.
4. Develop good relationships with pupils; be interested in their problems; always give encouragement; learn the causes of hearing defects as well as the hearing range of each child; and, above all, be patient.
5. Handle any special considerations shown hearing impaired pupils so as not to call undue attention to their defects. Classmates should realize that hearing handicaps are no less acceptable than other observable physical disabilities such as vision or absence of or permanent injury to an arm or leg.
6. Speak naturally but distinctly (with normal tones and rhythms) and do not exaggerate speech movements.
7. Use grammatically complete sentences as well as contextual clues, and refrain from using signs or gestures.
8. Seat hearing impaired students as close to the speaker as possible.
9. Learn how students feel toward their hearing losses. This enables teachers to intelligently help students adjust socially and educationally, and also instills confidence in students so that they will not withdraw because of their disabilities. Also, try to learn how students interpret the reactions of others to the problem.
10. Encourage students to look at people when talking to them so that better lip or speech reading will result, and the students will become more self-confident. After all, watching the faces of those speaking is the courteous thing to do.
11. Have older hard-of-hearing students tabulate the number of times normal hearing students say thing like "What did you say?" "Will you say that again?" This helps alleviate feelings of self-consciousness when asking for repeats of what someone has said.

12. Remember that students with hearing losses require more rest. They become readily fatigued from the strain of communicating and listening while still trying to keep up with and compete in classroom activities. This should be kept in mind when making individual assignments in projects and related classroom activities. However, expect hard-of-hearing students to complete regular class assignments, and if they do poor work for reasons unconnected with their hearing difficulty, face this fact realistically.
13. Expect normal behavior and encourage independence in hearing handicapped students whose experiences may be limited, but who are generally of average ability. Assure these students that they will not be reprimanded when not hearing their names called. Do not punish hearing impaired students without determining if the instructions that were given were heard or understood.
14. Visit with parents of hearing impaired students. In such meetings, stress to the family that they should:
    a. Assist their hearing impaired child in accepting his/her handicap as a challenge to be met frankly and openly. He/she should not become sensitive or overanxious about the defect.
    b. Encourage their child to take part in all family activities and to participate in organized social groups such as scouts, athletics, clubs, etc.
    c. Refrain from treating their child as an exception in the home situation. Expect the same behavior that would be expected from other children -- socially, physically, and mentally (such as sharing family duties to develop self-reliance).
15. Confer with principals, public health nurses, other teachers, psychologists, physicians, and the special education advisors to investigate the educational, personal, and medical characteristics of every hearing handicapped student since individual needs will govern the type of assistance recommended.
16. Remember that hearing levels vary due to the seasons, frequency of colds, infection of the nose and throat, mouth breathing, recurring earaches, and/or draining ears. Report such observations to the proper source for immediate medical attention.
17. Call upon speech and hearing teachers to provide instruction in special skills. Such instruction includes speech training, and instruction in the proper care and use of hearing aids.
18. Know how to help those students for whom the use of a hearing aid has been recommended.
    a. Remember that hearing aids are simple devices for magnifying sound. It is invaluable to persons with certain hearing difficulties -- but totally useless to others. Hearing aids have limitations and at best can only make sounds lounder -- it will improve the wearer's ability to understand speech by only about 40 per cent. Hearing aids do not enable persons to correct speech or to sort out sounds.
    b. If advisable, have students explain and demonstrate the hearing aid to the rest of the class. In this way classmates learn to accept the instrument as a normal accessory, just as they readily accept eyeglasses on other students.
    c. See that students wear their hearing aids regularly and are responsible for its care and daily "inspection."

d. Be certain the instrument and the earmold are kept clean and in good repair. (Worn-out batteries or cords are usually the hearing aid items which need replacement most often. If the aid itself seems defective, notify parents at once.)

e. Should an instrument whistle or squeal:
   1. Check the earmold to make certain it is in properly.
   2. Check the volume.
   3. Determine if the student is too close to the wall, window, or blackboard, and move him from sound reflecting, hard, smooth surfaces.

f. Encourage students to keep their hearing aids turned on. One who makes a poor adjustment in using amplication may have the earpiece inserted but may not turn the instrument on because of fear of confusing background "noises."

Some Classroom Adaptations for the Hearing Impaired

The following guide is included to stimulate thought. The adaptations listed are certainly not all inclusive.

Student Characteristics	Problem-Causing Situations and Tasks	Examples of Classroom Adaptations
1. Cannot demonstrate knowledge. a. Frequently fails to respond to questions. b. Verbally indicates understanding or nods in agreement, but cannot demonstrate understanding. c. Makes irrelevant comments or answers to questions.	1. Overusing oral instruction. a. Using lecture method. b. Frequently using oral discussion and questions. c. Giving oral instructions for assignments.	1. Rely on nonverbal techniques. a. Teach specific vocabulary and concepts related to the skill being taught. b. Make students aware of what the final product is to be, as well as the specific steps and sequence required for completion. c. Make extensive use of demonstrations. Rather than telling students "how to," show them. d. Encourage students to immediately ask for clarification or repetition of a question. e. Incorporate specific safety precautions into lessons when safety is a concern. (1) Stress the reasons for all safety procedures. (2) Explain fire and tornado evacuation procedures. (3) Explain and expect the proper use and maintenance of all equipment. (4) Install flashing red lights to supplement audible warning devices such as fire bells. (5) Prevent the misuse of tools and equipment and any resultant accidents by planning step-by-step sequencing of activities.

Student Characteristics	Problem-Causing Situations and Tasks	Examples of Classroom Adaptations
2. Does not participate in large group instruction.	2. Relying only on verbal communication.	2. Vary instructional techniques.
a. Often seems inattentive, especially to auditory activities.	a. Using group discussion frequently and with student chairs in rows.	a. Avoid classroom lectures. Use visual examples and demonstrations if oral instructions are necessary.
b. Often unable to tell who is speaking in a group.	b. Using tape recorders for instruction.	b. Make extensive use of visual aids: (1) Illustrated charts (2) Films, especially captioned films (3) Slides (4) Transparencies (5) Models and markups (6) Captioned films
c. Becomes tense during periods requiring listening.	c. Using audio portions of any audio-visual aids.	c. If captioned films are not available: (1) Provide students with the script or written description of what is shown.
d. May have enough residual hearing to profit from a hearing aid or another type of sound application, or may depend entirely on speech reading and visual learning.	d. Making announcements or giving instructions around other auditory interference (i.e., hall noises, student conversations, machine noises, traffic and outside noises, etc.).	d. Arrange classroom to facilitate lip reading. (1) Write on the board without speaking; then turn toward the class to speak. (2) Face students squarely so that your whole face can be seen. (3) If possible, avoid having light behind you so that students do not have to look into the light and consequently be unable to see your lips and face. (4) Do not exaggerate mouth movements for speech since this will confuse, rather than help students. Speak in a natural, relaxed fashion and keep the view of your mouth unobstructed.

Student Characteristics	Problem-Causing Situations and Tasks	Examples of Classroom Adaptations
		(5) Speak in complete sentences to aid students in figuring out unfamiliar words through contextual clues. (6) When speaking, stay in one place. e. Make assignments which do not require a very long auditory memory span. If remembering what is taught orally is required, make a study guide to accompany the assignment.
	f. Assigning students seats in the back of the room.	
3. Interrupts instruction. a. Frequently asks to have words or phrases repeated. b. Uses "What?" often. c. Pauses and frowns or leans forward with intense concentration when addressed. d. Interrupts conversation.	3. Disciplining the students or having unrealistic expectations. a. Expecting students to take notes. b. Using materials which are above reading level of students. c. Having soft-spoken teachers or students, or teachers with mustaches and/or beards. d. Using slang colloquialisms, abstract concepts, or words not in common usage in class lectures.	3. Increase instructional resources. a. Make use of tutors, interpreters, note-takers, and recorders when appropriate. b. Acquire a basic knowledge of manual communication. c. If needed, use every available avenue of learning, including speech, listening, gestures, finger-spelling, and signing. d. In presenting a new word or asking a question, repeat it if it is not understood the first time; speak directly to the students. If students seem to miss the term or request, rephrase what was originally said. This will usually aid in the understanding of what is said.

Student Characteristics	Problem-Causing Situations and Tasks	Examples of Classroom Adaptations
e. Depending on severity of hearing loss, exhibits language disorders and more limited vocabulary than peers, resulting in communication problems	e. Failing to use visual, concrete examples when introducing new concepts.	e. When using phrases or figures of speech that may be unfamiliar to students, explain or rephrase the information to aid in comprehension.
f. Often naive, taken advantage of easily, and lacks self-confidence.		f. Encourage the support and understanding of the other students in the class for hearing impaired students. (1) Plan an activity in which hearing impaired students can demonstrate their abilities. (2) Help hearing impaired students to accept their mistakes humorously.
4. Does not seem normal physically.	4. Ignoring subtle warning signs.	4. Pay attention to students.
a. Shows deformity or swelling in or about the ears.	a. Failing to recognize a student's nonverbal movements as an indication of lack of hearing or understanding.	a. Evaluate each learner prior to entry into your program to determine performance ability and the possibility of other handicapping conditions.
b. Holds head in a peculiar position when spoken to, or turns one ear to the speaker.	b. Failing to provide independent instructional make-up lessons when students are absent due to illness.	b. Foster an open communication system between parents, teachers, and students and plan for periodic counseling.
c. Often has earaches or colds, discharge from ears.	c. Failing to note physical changes in behavior which could indicate illness (such as irrationality, fatigue, etc.).	c. Be aware of need and sources for medical referrals.

Student Characteristics	Problem-Causing Situations and Tasks	Examples of Classroom Adaptations
5. Has difficulty with speech.		
a. Mispronounces simple words; omits or substitutes sounds in speech.	a. Assigning students to a classroom or work area located near a parking lot, playground, music room, etc.	a. Encourage proper amplification. Students should be advised to adjust the volume of their hearing aids in extremely noisy areas in order to avoid painful noise levels.
b. May be exceptionally loud.	b. Arranging the classroom with desks facing windows.	b. Give hearing impaired students as much opportunity to speak as other students in the class.
	c. Expecting every student to recite in class and give oral reports.	c. Do not accept either shouting or inaudible responses from students. d. Have students sit near the sound source and away from external noises. e. Encourage students to participate in discussions and presentations. (1) Have students repeat questions or information to assess understanding. (2) Give students an outline of what will be taught before class so that they will know what will be discussed. (3) Give students opportunities to demonstrate knowledge of a subject if they have trouble communicating answers.

From the preceding information, it is hoped that teachers have gained insight into the symptoms of hearing impairments, the problems faced by the hearing impaired, and ways of helping hearing impaired students in the classroom.

The greatest handicap for the hearing impaired is the view held by many that they are incapable of learning. If this barrier can be overcome, the outlook for hearing handicapped students will be greatly improved.

Annotated Bibliography

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An excellent reference for instructing the hearing handicapped.

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Gallaudet College, Division of Public Services. **Outline of Pointers for New Teachers to Remember in Working with an Interpreter.** Kendall Green, Washington, D.C.: n.d.

An excellent resource for the vocational teacher who has had limited experience with hard of hearing.

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An overview of deafness and how one can better learn to adapt to this handicap.

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Gloria, Aram. **Getting Through: A Guide to Better Understanding of the Hard of Hearing.** Chicago: Zenith Radio Corporation, 1971.

An informative overview of the world of the hearing impaired.

Kanda, Jan. **Personal Communication.** October 1979.

Kirk, Samuel A. **Educating Exceptional Children.** (2nd ed.) Boston: Houghton Mifflin Company, 1972.

Kurth, Linda. **Typewriting for the Handicapped Student. A Very Special Workshop.** Whitewater: University of Wisconsin, n.d.

Lausten, Otto. **Personal Communication.** July 1979.

Luke, Robert A., and Linda Donnels. **Welcome to the Quiet Life: A Handbook for Adult Education Teachers and Teacher Trainers.** Washington, D.C.: Gallaudet College Center for Continuing Education, 1974.

Maloney, Patricia, and Robert Weisberger. **Mainstreaming the Handicapped in Vocational Education Serving the Communication Impaired.** Palo Alto, California: Eric Document Reproduction Service, ED 142749, 1977.

This article discusses various types of presentations of materials to help the hearing handicapped.

Milligan, Louise, ed. **Handbook for Staff Working with Hearing Impaired Students.** St. Paul: St. Paul Technical Vocational Institute Program for Deaf Students, 1979.

This is an excellent resource for teachers and is presented in a practical and realistic manner.

Model Demonstration Program. **Communicating with Hearing Impaired/Developmentally Disabled Persons.** Tuscon: The Rehabilitation Center, College of Education, University of Arizona, 1978.

Model Demonstration Program. **How To Help a Person Who Is Hearing Impaired and Developmentally Disabled Benefit from a Hearing Aid.** Tuscon: The Rehabilitation Center, College of Education, University of Arizona, 1978.

An excellent resource for the person wearing a hearing aid.

Model Demonstration Program. **Mainstreaming the Hearing Impaired Child.** Tuscon: The Rehabilitation Center, College of Education, University of Arizona, 1978.

This article presents information that can be easily incorporated into the regular classroom.

Mott Community College. **Instructor/Student/Staff Handbook.** Flint: Hearing Impaired Program, 1978.

National Association of Hearing and Speech Agencies. **Suggestions Concerning Pupils with Hearing Impairments.** Silver Spring, Maryland: 1977.

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This article focuses on employment of the hearing handicapped and their outstanding contributions as an employee.

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Sullivan, Toni. **Personal Communication.** October 1979.

Vanstone, Charles. "Breaking the Sound Barrier," **Vanguard.** Vol. 26 (1979), pp. 1-4.

Vocational Curriculum Resources for Handicapped Students. **A Guide to Print and Non-Print Instructional Materials.** Maryland Vocational Curriculum Research and Development Center. University of Maryland: n.d.

Audio-Visuals and Records

"Diagnostic Test for Speech Reading." Kit includes open reel film illustration plates and manual. Grune and Stratton, 111 5th Avenue, New York City, New York 10003. This film is excellent for demonstrating the difficulties encountered in speech reading phrases and words.

"Feel Not Good." Filmstrip, cassette, 16 min, color. Wisconsin Vocational Studies Center, University of Wisconsin-Madison, 964 Education Sciences Building, 1025 W. Johnson St., Madison, Wisconsin 53706. This filmstrip isolates the special problems of the hearing impaired, how to recognize and assist hearing impaired students.

"Getting Through: A Guide to Better Understanding of the Hard of Hearing." By Aram Glorig, Zenith Radio Corp., 6501 W. Grand Avenue, Chicago, Illinois 60635. Packet contains one 33 1/3 rpm record and user's guide. Simulates the various levels of hearing difficulties experienced by the hard of hearing population. Record can be easily taped for usage in a cassette recorder.

"The Boss' Responsibility." 16 mm, 6 min, color. Universal Education and Visual Arts, 100 Universal City Plaza, Universal City, California 91608. Pete is a young deaf carpenter who resents his boss' constant reminders to keep working. When the boss becomes ill, he puts Pete in charge for the day. Pete is then forced to make decisions, assign the work load and keep the workers on a tight schedule. From this experience Pete learns to appreciate and understand the pressures and responsibilities of being a boss.

"Work Regulations." 16 mm, 16 min, color. Universal Educational and Visual Arts, 100 Universal City Plaza, Universal City, California 91608. A young pressman in a printing shop uses his hearing deficiency as a crutch. Because his work habits are inadequate and his attitude defensive when corrected for these inadequacies, he misses a promotion in spite of his being the most skilled person available. Positive attitudes toward work and a rudimentary understanding of what is expected of any employee, regardless of job, are emphasized.

Captioned Films for Vocational Education

"Accounting: Basic Procedures"

When Jim sells his lawnmower rental business, he has to find answers to the questions: How much did he make last year? What does he owe now? How much does he owe to others? Standard methods of keeping ledgers and journals are illustrated and explained. (Color; 11 minutes)

"Aptitudes and Occupations" (Second edition)

A group of students and their counselor examine scholastic achievement, aptitude, and interest tests -- the basic types used to guide students toward the selection of a satisfying occupation. The basic groups of aptitudes and interests are fully illustrated in scenes detailing a variety of occupational categories. Individual counseling and consideration of scholastic records and extracurricular activities are stressed as necessary adjuncts of testing. (Color; 16 minutes)

"Banks and Credit"

This film demonstrates the services rendered by banks and the techniques involved in rendering these services quickly and carefully. The meaning of credit is propounded. (Color; 11 minutes)

"Filing Procedures in Business"

This film shows a step-by-step breakdown of the procedures for recordkeeping in a typical business office, including the preparation of records for filing, filing of records, retrieval and transfer to storage. The film shows the different menthods of file organization, such as alphabetical, numerical, geographical, and subject. (Color; 14 minutes)

"Typing Skills -- Daily Job Techniques" (Second Edition of **Ready to Type**)
On-the-job typing proficiency requires adequate preparation for the day's work, in addition to the mastering of basic operating skills. A typist anticipates a variety of jobs and plans each individual job. She eliminates needless movement and increases her output by organizing her desk, grouping similar jobs, and applying special techniques to such tasks as typing envelopes, stencils, and tabulated reports. (Black and white; 13 minutes)

"Writing Better Business Letters"
This film demonstrates clearly and concisely the necessary form and content required for business correspondence. (Color; 11 minutes)

For information on educational and entertainment captioned films, address inquiries to:

Captioned Films for the Deaf Distribution Center
5034 Wisconsin Avenue, N.W.
Washington, D.C. 20016

Free Resources

The following information is available free of charge from:

Rochester Institute of Technology
National Technical Institute for the Deaf
Office of Public Information
One Lomb Memorial Drive
Rochester, N. Y. 14623

Bishop, Milo E., and Alan Hurwitz. **Teaching Hearing-Impaired Students in a Mainstreamed Environment.**

Northcott, Winifred. **Implication of Mainstreaming for the Education of Deaf Children in the 1980's.**

Wilson, Jimmie. **The Tutor/Notetakers as a Support Service for Hearing Impaired Students: The Training Program.**

South Carolina State Library
Division for the Blind and Physically Handicapped
700 Knox Abbott Drive
Cayce, S. C. 29033 (toll free 1-800-922-7818)

Talking books (tape-recorded books) and special amplifiers are available on a loan basis for individuals with moderate and profound hearing losses.

Catalog

Special Materials Project, Handicapped Learner Materials Distribution Center. **Catalog of Instructional Materials for the Handicapped Learner.** Washington: Bureau of Education for the Handicapped, Office of Education, 1979.

A catalog of free loan materias including over 1000 captioned films and training materials for those who teach the handicapped. Many other loan materials are also available free of charage.

Vocational Materials

The following information can be ordered from:

New Jersey Vocational-Technical Curriculum Laboratory
Rutgers University
4103 Kilmer Campus
New Brunswick, New Jersey 08903
Telephone: 201-932-3845

About Business. 1978.

Business-office and work-related communication skills for the hearing impaired.

About Buying on Credit. 1978.

A brief manual of 12 lessons written for hearing impaired students in office occupations.

Child Care. 1978.

Daily living skills in home economics for the hearing impaired.

Home Nursing. 1978.

Curriculum guides, activities, resources in home economics for the hearing impaired.

Agency Resources

There are several organizations offering services to the hearing impaired. Listed below are a few of the national organizations which provide information and resources for the general public.

Alexander Graham Bell Association for the Deaf, Inc.
1537 35th Street N.W.
Washington, D.C. 20007

American Speech and Hearing Association
9030 Old Georgetown Road
Washington, D.C. 20014

Council of Organizations Serving the Deaf
P. O. Box 894
Columbia, Maryland 21044

Gallaudet College
Public Service Programs
Kendall Green
Washington, D.C. 20002

International Association of Parents of the Deaf
814 Thayer Avenue
Silver Spring, Maryland 20910

National Association of the Deaf
814 Thayer Avenue
Silver Spring, Maryland 20910

National Technical Institute for the Deaf
Rochester Institute of Technology
1 Lomb Memorial Drive
Rochester, New York 14623

The President's Committee on Employment of the Handicapped
Washington, D.C. 20210

Exemplary Programs

Program Title: Cape Cod Regional Technical High School

Address: Pleasant Lake Avenue
Harwich, Massachusetts 02645

Contact Person: A. Paul Hackett, Coordinator of Special Needs

Target Population Characteristics: The special needs program at the high school serves approximately 150 of 1,000 students in grades nine through twelve. These 150 have neurological damage, hearing impairments, mild retardation, emotional disturbances, and visual handicaps.

Sponsorship: The program is funded by the Massachusetts Department of Education.

Staffing Pattern: The special needs program is integrated with the regular high school program. Staff support for handicapped clients consists of four departmentally assigned academic resource teachers, three vocational resource teachers, and three teacher aides who work primarily in the vocational area.

Program Objectives: This program is designed to provide resource services for handicapped students and for regular teachers who deal with handicapped students in their classrooms and shops when there is need for individual students to receive special services in order to achieve success and growth.

Types of Program Activities: Fully trained and vocationally approved vocational teachers act as resource persons to both handicapped students and regular vocational teachers. Students have a choice of twenty-two vocational training programs. The functions of the vocational resource teachers are to:

1. Diagnose the special learning needs of students in the vocational area.
2. Assist vocational teachers in developing adaptive and alternative programs for special needs students.
3. Provide intense small group and individual vocational instruction in regular shops.
4. Provide a resource for crisis intervention with special needs students.
5. Monitor individual educational plans.

Program Title: Lynhaven Career Center

Address: 3560 Lynhaven Drive
Columbia, South Carolina 29204
Telephone: 803/786-5600

Principal: Dr. Lynn Smith

Contact Person: Jim Bagnal
Teacher Coordinator
Handicapped Vocational Education

Target Population Characteristics: Lynhaven Career Center is designed to serve approximately 600 high school students who are provided transportation to the center from five inner city schools for vocational training. Of this number, approximately 75 identified handicapped students receive vocational training in a mainstreamed setting. The handicapping conditions include educable mentally handicapped, learning disabled, and hearing handicapped students in grades 9 through 12.

Sponsorship: Local, state, and federal funds contribute to the operation of the prgram.

Staffing Pattern: The special needs program is integrated with the regular high school program in a mainstreamed approach. Staff support includes a principal, assistant principal, counselor, fifteen vocational teachers, ten aides, and three interpreters for the nine hearing impaired students currently enrolled in the program. A teacher-coordinator for handicapped vocational education helps in the mainstreaming of special needs students in the various vocational courses.

A vital part of the success of the mainstreaming approach takes place before students enter the program. Ninth and tenth grade special needs students are assesed through the use of the Talent Assessment Program which measures the innate vocational abilities of students. Also a team approach is used in vocational placement in which guidance counselors, special education and vocational education teachers sit down, discuss, and, if necessary, write an individual educational plan for the student if adaptations are needed.

Another aspect of the program is the flexibility to transfer students to more appropriate courses if teachers note less than acceptable progress early in the school year.

Program Objectives: This program is designed to provide special needs students with the opportunity for vocational training along with their nonhandicapped peers.

Types of Program Activities: This program provides instruction and hands-on activities in the following vocational areas: graphic arts, auto body repair, auto mechanics, brick masonry, welding, machine shop, building construction, electricity, electronics, food service, child care, cosmetology, and health careers.

Support Services: Services for handicapped students at Lynhaven Career Center include vocational counseling, individual personal adjustment, individual work adjustment, assistance from teacher-coordinator for handicapped vocational education, and services through Vocational Rehabilitation.

Program Title: Special Handicapped Occupational Education

Address: Board of Cooperative Educational Service
Second Supervisory District of Suffolk County
201 Sunrise Highway
Patchogue, New York 11772

Contact Person: Eugene J. Masucci, Administrator

Target Population Characteristics: The program serves approximately 640 students ages twelve to twenty-one with the following handicapping conditions: educable mentally retarded (EMR), emotionally disturbed, neurologically impaired, learning disabled, learning adjustment, and physically handicapped.

Sponsorship: The program operates at two facilities to which the sending school district pays $2,200 per client.

Staffing Pattern: One career center is staffed by a principal, an assistant principal, a nurse, and nineteen teachers (serving 380 students); the other is staffed by a principal and nine teachers (serving 260 students). Auxiliary personnel include four secretaries, an account clerk, and three full-time and one half-time custodial employees.

Program Objectives: The objectives of the program are:

1. To assist handicapped secondary students in testing, exploring, and selecting occupational subjects.
2. To provide Occupational Education (OE) instructional programs equal in staff, facilities, equipment, and supplies to the regular OE programs.
3. To provide quality instruction which leads to regular employment, a higher education program, or employment in a sheltered workshop.
4. To provide students with exposure to, and training within, various occupational areas with an emphasis on special educational teaching techniques.

Types of Program Activities: The student's instructional day consists of academic instruction and two and one-half hours of occupational education. Phase I (ages twelve to fourteen) provides industrial arts type training in five areas and emphasizes eye and hand coordination, five-finger dexterity, behavioral modification, and introduction to career awareness. Phase II (ages fourteen to sixteen) is a trimester exploratory experience where most students experience six to nine occupational areas(of an available total of sixteen) with a two- to three-year span. Phase III (ages sixteen to twenty-one) is designed for those students who have successfully completed Phase II, or who have been judged to have the proper attitude and behavior characteristics to pursue occupational training, but because of physical or mental limitations are not yet ready to enter into the regular occupational areas. Phase IV is based on the following resources outside the program, including:

1. Regular occupational education
2. Work-study
3. Mainstreaming
4. Placement in the Association for the Help of Retarded Children
5. Placement in Skills Unlimited
6. Recommendation to the Office of Vocational Rehabilitation

Program Title: Vocational Assessment Center

Address: 4345 Fifty-Fourth Street
San Diego, California 92115

Contact Person: Gwen Hutchinson

Target Population Characteristics: Students in special education classes and all handicapped students at the seconday level in the San Diego City Schools are provided with vocational planning/programming services through the center. For students who cannot be appropriately assessed there, the center subcontracts with Sharp Rehabilitation Center.

Sponsorship: The project is funded by Vocational Education Act monies for handicapped students.

Staffing Pattern: The master plan for the center calls for four full-time and one half-time rehabilitation counselors as well as in-service for special and regular education teachers, vocational education and regional occupational program teachers. The assessment center also includes resource specialists, district counselors, and related personnel.

Program Objectives: The goals of the program are to increase opportunities for participation of handicapped students in prevocational/vocational education in a planned sequential and systematic process and to develop in selected students the abilities and attitudes necessary to function in vocational courses and/or work experience programs.

Types of Program Activities: The regular educational and vocational curriculum incorporates a program for the handicapped that addresses self-concept, dealing with feelings (positive/negative), coping skills, and self-acceptance.

Support Services: Extensive involvement of parents and the community is incorporated within the system to cooperatively assist the prevocational/vocational plans and the vocational aspirational needs of students.

Program Title: VR-PS Program (Vocational Rehabilitation -- Public School Program)

Address: 1323 Washington Street
Columbia, South Carolina 29201

Project Director: Paul McCravy

Vocational Production Coordinator: Agnes Weiss

Target Population Characteristics: The VR-PS Program is designed to serve approximately 100 students in Richland School District One, including trainable, educable, emotionally, and orthopedically handicapped. The center also serves additional clients throughout the area. The students may be 16 years of age and enrolled in self-contained classes in their respective schools.

Sponsorship: Local, state, and federal funding through both Vocational Rehabilitation and Richland School District One is used in the fiscal operation of the program.

Staffing Pattern: The Vocational Rehabilitation -- Public School Program is composed of six vocational rehabilitation employees and seven school employees. The VR staff consists of a project supervisor, two counselors, two casework assistants, and one evaluator. The school staff is composed of three teachers and four aides.

Program Objectives: The emphasis of the program is the provision of realistic work experiences in order to assist handicapped individuals in developing work related skills in order that they may be able to successfully enter the world of work upon completion of high school.

Types of Program Activities: The program is designed to provide sub-contract work obtained through local business and industry. The students are paid on a piece rate basis which is governed by a Department of Labor Handicapped Work Certificate and are covered under Workmen's Compensation.

Support Services: The students enrolled in the program receive a complete vocational evaluation, medical evaluation, personal-social adjustment, guidance, and counseling. Additional services such as dental treatment and glasses are provided as needed. The program has also been beneficial in helping some students with employment after high school and also in continuing their education in the local TEC system.

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EMOTIONALLY HANDICAPPED

Description and Characteristics of the Emotionally Handicapped

Research studies propose two theories for the identification of the emotionally handicapped. The first theory focuses on specific behaviors rather than on individuals, and proposes that any person, during a temporary crisis, may suffer from emotional problems that may impair effective learning. In defending this position, Shea (1978) states:

> Individuals perceived as "normal" have periods in their lifetime during which, under certain environmental conditions, they could be classified as emotionally disturbed. It appears to be normal for humans to have periods that are characterized by crisis, conflict, depression, and stress. At these times the individual manifests bizarre or socially unacceptable behaviors similar to the behaviors exhibited by persons classified as emotionally disturbed.

The second theory, and the viewpoint upon which this work will rely, is a more traditional way of looking at the emotionally handicapped. This viewpoint attempts to categorize emotionally disturbed students by classifying recognizable patterns of behavior. As stated by Crowley (1981), "emotionally handicapped pupils means pupils of legal school age with demonstrably adequate intellectual potential who, because of emotional, motivational, or social disturbance, require special classes or specialized education instruction suited to their needs."

Vocational instructors can apply the following information to either emotionally disturbed students or to those with short-term emotional disabilities.

Points To Remember

1. Emotionally handicapped students can be any size, age, color, or heritage.
2. Emotions are a basic component of learning for any student.
3. Any student, at one time or another, may suffer emotional problems that interfere with learning.
4. Students who are angry, anxious, or depressed cannot learn as effectively as those who are not.
5. Behaviors of emotionally handicapped students and those with short-term emotional problems are similar. Behaviors are evaluated regarding frequency, intensity, duration, and type in order to determine whether referral for special evaluation is appropriate.
6. Rate of learning is different for every student, and for this reason certain students will require special attention in order that they may stay within the numerical grade system imposed by public education.

General Types of Behavior Disorders

According to Hewett (1964), there are three types of behavior disorders.

1. Unsocialized aggressive children defy all authority; are hostile toward authority figures; are cruel, malicious, and assaultive; and possess inadequate guilt feelings.

2. Socialized agressive children exhibit the same characteristics as above, but are socialized within their peer groups (gangs or companions) in misdemeanor and crime.
3. Overinhibited children are shy, timid, seclusive, sensitive, and submissive.

Characteristics of the Emotionally Handicapped

Morse, Cutler, and Fink (1964) established the following population characteristics for the emotionally handicapped students they studied.

1. The age range was from 5 to 15 years, with a mean of 9.4 years for the boys and 9.8 years for the girls.
2. 83.2 percent were boys and 16.8 percent were girls.
3. Teachers rated the majority of these children as educationally retarded compared to their chronological age and educational expectancy.
4. IQ range was from 68 to above 132. The majority of children had IQ's over 100 (or an above average IQ).
5. More than 50 percent of the sample was classified as neurotic, with "acting out" behavior as the dominant conduct problem; another large group was classified as immature.

Bower (1959) notes the following characteristics as being common to most emotionally handicapped people.

1. An inability to learn, which cannot be explained by intellectual, sensory, or health factors.
2. An inability to build or maintain satisfactory interpersonal relationships with peers and teachers.
3. Inappropirate types of behavior or feelings under normal conditions.
4. A general, pervasive mood of unhappiness or depression.
5. A tendency to develop physical symptoms, pains, or fears associated with personal or school problems.

Categories of the Emotionally Handicapped

Following are several recognizable categories of emotional handicapped students.

Socially Maladjusted

Characteristics:

1. Has a poor attendance record.
2. Is sullen and unhappy.
3. Is indifferent and inattentive.
4. Fails for no apparent reason.
5. Achieves less than abilities indicate.
6. Feels picked on.
7. Is jealous.
8. Is not accepted by others.
9. Lacks a sense of humor.
10. Fights rather than lets others win an argument.

Possible reasons for behavior:

1. Had little affection as a child.
2. Had cold and indifferent teacher.
3. Has a poor environmental background.
4. Has problems with peers.
5. May often be left out of group situations because of physical appearance, size, attitude or actions. Cannot get along with others.

Withdrawn

Characteristics:

1. Is sullen, unhappy, worried.
2. Averts eyes or ignores questions.
3. Withdraws at one time more than at another.
4. Thinks own ideas are not worth much.
5. Has difficulty expressing thoughts and emotions.
6. Has a deadpan or vacant expression.
7. Shows sudden surges of hate, fear, affection, or anger.
8. Daydreams.
9. Has poor relationships with others.
10. Has a short attention span.
11. Quits difficult tasks readily.
12. Keeps in the background.
13. Easily upset, hurt, or discouraged.

Possible reasons for behavior:

1. Finds something about a situation impossible to endure.
2. Experiences too many failures and too few successes.
3. Sets his/her standards too high.
4. Has an organic (physical) difficulty.
5. Has a personality disorder (requires a specialist to identify).
6. Has been bullied or browbeaten.

Aggressive

Characteristics:

1. Seems to look for trouble.
2. Wants his/her own way.
3. Is often on the defensive.
4. Blames others.
5. May bully, fight, pick on others.
6. Is quarrelsome.
7. Disrupts class and routine procedures.
8. May steal and lie.
9. May destroy property.
10. May be resentful, defiant, rude, sullen, or insolent.
11. May resent authority figures.

Possible reasons for behavior:

1. Has domineering, overly strict parents.
2. Has a fear of expressing his/her feelings towards appropriate people. May take this frustration out on others.
3. May have weak and overindulgent parents.
4. Is unhappy in relationships with others.
5. Feels a lack of affection.
6. Dislikes the teacher.

Overly Extroverted

Characteristics:

1. Rebels when suppressed.
2. Is a nonconformist.
3. Interrupts; cannot wait for his/her turn in a discussion.
4. Is overbearing and domineering.
5. Has many friends.
6. May be good at sports.
7. Wants to be the center of attention.
8. Is overly aggressive.

Possible reasons for behavior:

1. Has a lack of attention, love, and warmth from family and friends.
2. Feels a lack of truly challenging activities.
3. Feels insecure, inferior.
4. Is possibly a victim of his/her environment -- his/her parents may have the same personality characteristics.

Easily Upset

Characteristics:

1. Feels insecure.
2. Is fearful or worried.
3. Has a "chip-on-the shoulder" attitude.
4. Fails in school with no apparent reason.
5. Has emotional blocks to learning.
6. Has a past short-term memory that cannot be explained by mental deficiency.
7. Does not respond unless he/she thinks he/she is right.
8. Has a negative attitude.
9. Imagines illness when nothing is physically wrong.

Possible reasons for behavior:

1. Has a sudden change in his/her life -- a crisis.
2. Is slow to develop physically.
3. Has a lack of affection and encouragement from parents and friends.
4. May have had excitable parents.
5. May have demanding parents.

Overly Shy or Timid

Characteristics:

1. Bites fingernails frequently or displays other nervous habits.
2. Talks in a very soft voice.
3. Twists, smooths, or pulls his/her hair frequently, especially when with people.
4. Sits quietly most of the time.
5. Has difficulty in carrying on a conversation.
6. May rock back and forth or constantly swing feet.
7. Withdraws and hangs back.
8. Seldom does anything to get into trouble.
9. Has few friends.
10. Moves constantly when not sitting.
11. Avoids contact with people.
12. Perspires profusely in even mildly stressful situations.
13. Is fearful of people.
14. Never stands up for him/herself or his/her ideas.
15. Hangs head or lowers eyes when talking with others.
16. Tires without apparent reason.

Possible reasons for behavior:

1. Has a family situation which may be tense and easily upset.
2. Has unreasonable fears.
3. Has conflicts between family members.
4. Has a lack of positive experiences.
5. Has expectations which are too high.
6. Experiences too many failures.
7. May perceive nonexistent physical deformities in self.
8. Tries too hard to succeed.
9. Has chronic health problems.

In conclusion, it is important for instructors to remember that some or all of these emotional characteristics may be displayed by students in any of the above categories, and that behaviors may be short- or long-term. If observation is made and if teachers observe marked or sudden changes in appearances, academic abilities, or willingness to interact with other students, it would be wise to get a second opinion from a specialist. A behavioral consultant should observe the class and offer suggestions, as instructors' relationships with particular students may interfere with objective diagnosis of problem situations.

Unique Needs of the Emotionally Handicapped

In this section, equipment modifications, teaching aids, classroom modifications, and special emotional and physical needs of emotionally handicapped students will be addressed. These instructional variables will be focused on with the viewpoint of making classrooms as stable and pleasant as possible for both instructors and students. While Mosier and Park (1979) have stated that "art displays and bulletin boards should be changed frequently," most authorities feel that emotionally handicapped students learn best in surroundings that do not change often. When changes are made in classrooms, they should be made gradually in order to keep students from feeling insecure or threatened.

Audio-visual materials are very important. To many emotionally handicapped students, fact or process can often be more efectively taught through the use of films and cassettes rather than through reading matter.

Suggested audio-visual equipment includes sound-filmstrip projectors, 16mm projectors, video tape equipment, cassette recorders, and headphones. These devices allow instructors to present complicated procedures as a series of short, easily comprehended tasks. When used by individual students, these devices allow for nonthreatening self-paced instructions, as students can stop machines at any point for questions or assistance.

Tapes, filmstrips, and films may be purchased for vocational education programs, or they may be borrowed from media centers of the school systems, or from the Vocational Rehabilitation Department which has a wealth of vocationally related material. The Department of Education also offers an excellent catalogue (free on loan) which lists 16mm films.

As for textbooks, teachers should insist on the freedom to select materials relevant to student needs. Teachers need not adopt one textbook for the whole class as no one book may work for all students. Materials may also be drawn from magazine and newspaper sources. To aid in using the local newspaper as a classroom resource, there is usually a group of individuals at the local paper in the N.I.E. (Newspaper In Education) department which assists teachers in the development of lessons which are geared to the class. The N.I.E. staff usually has a large volume of information which it provides through workshops, films, and pre-prepared lesson plans.

Special books may be ordered from certain publishers who gear their material toward emotionally disturbed students. J. Weston Walsh and Charles Bennett are two excellent publishing houses for these types of books. Several states publish curriculum guides which present daily lesson plans by sequencing short tasks into a procedure; some guides are especially designed for emotionally handicapped children.

Classroom libraries should be as large and varied as possible in order to accommodate a diverse range of age, grades, and ability levels in students. Teachers should not be afraid of providing workbooks and drill sheets which may only supply reassuring busywork. As students progress, the infusion of other written material will come naturally.

Free time for students should be used as a motivation and should be earned only after students have completed assigned tasks. Activity centers with a variety of high-interest materials can be utilized by students who have earned free time. Structure in the classroom during work and playtime "should not be confused with regimentation"; instead, "it refers to a carefully planned organizaiton of limits on student behavior within which the student can choose from an established set of alternatives." (Mosier and Park, 1979)

Classrooms should be kept as clean as possible, and cleaning chores should be shared with students in the vocational classroom. The viewpoint of "all of us must live here, so let's make it as clean as possible," instills pride in the members of the class.

"Distractions such as blinking lights, repetitious noise, unpleasant odors and a hot, stuffy room tend to increase (student) frustration." (Morse, 1976) Consistency in the classroom is vital, as "it is difficult for the student to cope with rearrangement of furniture or a drastically varied class routine." (Morse, 1976) The ideal situation is to have separate observation rooms for visitors as this poses less threat to emotionally handicapped students. Also, students should always have advance notice when visitors are coming so that emotionally handicapped students are not apprehensive.

In the same vein, a consistency in teacher attitude and behavior is very important. At times this may require that teachers mask their true feelings on an occasional "off" day.

It is also wise to divide students into small groups of four or five, if possible, for better control over activities. It also might be advantageous to use room dividers so that groups are not visible to one another. During testing it might be advisable that students be separated into different sections of the room or to arrange them otherwise for their privacy, while still allowing teachers to easily view the students.

Actually, many of these methods have been used successfully. The key idea is to provide consistency without boredom in a secure environment where students know the rules and where the rules do not change.

An advantage of working with emotionally handicapped students, within the realm of vocational education, is the use of hands-on lab projects. This in itself is therapeutic in nature. For many emotionally handicapped students, project work is viewed almost as play because students deal with tangible objects and actions, and because they can immediately see results. Student frustration, however, must be carefully guarded against.

When vocational instruction or student activities can be tailored to resemble play, the resulting lack of stress can be very helpful.

> Play has powerful potential....
> Play therapy is based upon the reconstructive nature of play. The motor components are useful channels of tension release. Play and games, free and structured, offer many opportunities for self and social learning. Some children are particularly responsive to games with music. (Morse, 1976)

By means of using play therapy as a learning motivation, teachers must remember that essentially they are assuming the role of teacher-therapist. This role brings with it the responsibility of making the class environment orderly and consistent.

Praise is always important, but teachers should remember to de-emphasize failure along with encouraging students to try again. It is important that teachers prevent students from becoming frustrated during set tasks. Expectations, rewards, and consequences for individuals and the class should be fair, predictable, and consistent.

For teachers dealing with students in vocational education, there is the added demand of shaping the studies to fit specific vocation-career goals. "Individual attention is required in knowing student career goals. A student who needs employment as soon as possible may want to learn a few skills, rather than master the entire program. This decision should be made through the agreement of the student, his parents, special education personnel, counselors, and the vocational educator. Upon leaving the course, a student who has completed only part of the objectives could receive a written list of acquired skills, rather than a certificate which implies mastery of the course." (Morse, 1976)

In conclusion, the key idea to remember in this section is consistency. Consistency should permeate the classroom without creating a mundane atmosphere. Consistency in teacher-student interactions is also of paramount importance; teachers must consistently praise or reward good behaviors and know the key to appropriately punishing negative behaviors.

Instructional Strategies for Emotionally Handicapped Students

> Mainstreaming, the popular term for placing handicapped students in the most integrated learning environment possible, often causes negative emotions in teachers. Already faced with a demanding job, some teachers resent the additions of handicapped students to their classes. Others acknowledge the student's right to the most appropriate educational placement, but feel that a lack of information and support services damage the student's chances for a valuable learning experience. Most teachers do not allow negative reactions to mainstreaming to interfere with their relationships with students, but for some this requires a conscious effort. (Haring, 1974)

In other words, mainstreaming experiences for both students and teachers will be only as successful as teachers allow it to be. Vocational teachers must be creative and innovative in their approaches to adapting vocational courses. It should be remembered that emotionally handicapped students are characterized by their low frustration levels and shortened concentration spans.

Of course, students who have any handicapping conditions usually require personalized instruction. Within this framework, the main instructional strategy is based on developing small tasks which provide successful stimulation and motivation, while leading to a mastery of the more complex learnings of which the tasks are a part. A good guideline for teachers is to limit their instruction to 15 or 20 minutes, because after this length of time student interest in the instruction will decrease. Allowing students to immediately apply the instruction in a hands-on activity is equally important.

Immediate gratification is a tool used to successfully motivate students by dividing vocational procedures into small activities that provide for the immediate gratification of task mastery. This completion of short-term goals in succession leads to the eventual mastery of the whole task.

While proceeding with daily class activities, teachers should also keep in mind several positive behavioral responses that can help to increase student interest and participation. Consider the following techniques.

1. Modeling. Encourage appropriate student behavior by calling attention to the constructive and desirable actions of others.
2. Cueing. This is a subtle, nonverbal way of letting students know that their behaviors are acceptable. A nod, a wink, or a pat on the back can work effectively.
3. Student-Teacher Contracts. This is a two-way agreement between teacher and student which states that a student must complete a task or behave in a certain way within a given time for a predetermined reward. The length of time for the contracts should start at two or three days and increase as the student learns to cope. The contract rewards should be individually pleasing and should be delivered as agreed.

4. Active Listening: By using students' own words to feed back or mirror problems they express, the teachers can often cause students to elaborate on their problems and thus develop understanding and communication. This gives students the opportunity to express feelings and increases the likelihood that they will further air anxieties.

During the course of the year, a number of emotionally handicapped students will fall into several recognizable groups. The more easily identified groups and appropriate instructional strategies for each group follow.

Socially Maladjusted

Instructional strategies:

1. Attempt to find out the cause of the maladjustment by consulting with each student's special education teacher or others familiar with the student.
2. Give students opportunities to work with others in small groups.
3. Attempt to get students to talk their problems out when something is obviously wrong.
4. Encourage students to improve their personal relationships.
5. Help students to understand the motivations of family, peers, etc.
6. Relate difficulties of students to specific situations, not generalities.
7. Investigate physical and health conditions of students.
8. Help students evaluate themselves constructively.
9. Assure students that they are wanted.

Things to remember:

1. Improvement will be slow.
2. Students will need patient and persistent effort by teachers.
3. Students may develop aggressive or withdrawn traits.
4. Positive changes in behavior take place in small increments.
5. Rejection will retard the improvement of students.
6. It is extremely wise to talk to professionals about individual students.

Withdrawn

Instructional strategies:

1. Give students help in developing skills that others will praise.
2. Make situations as pleasant and unthreatening as possible.
3. Avoid friction with students.
4. Arrange for students to work with one or two other students before moving into large group situations.
5. Teachers and classmates should be openly friendly.
6. Help students to do something successfully and then report on it to the group.
7. Give personal and class recognition to students' work.
8. Give students lots of affection in appropriate, but uncontrived, ways.

Things to remember:

1. Unpleasant situations will drive students into self-withdrawal.
2. Some people are by nature quiet people.
3. If people are emotionally disturbed, they may be retreating from problems that seem entirely too big and frightening to address.
4. Family and friends can help when it is possible to involve them.
5. Helping students achieve is good therapy.
6. Honest affection for students will draw them out.

Aggressive

Instructional strategies:

1. Keep students constantly busy.
2. Give simple but definite standards of conduct and stick to them for everyone everytime.
3. Use acceptable means of letting students get some of their aggression out.
4. Hold conferences regularly with students, not just for misbehavior, but also for positive reinforcement.
5. Give students controlled leadership responsibilities.
6. Reprimand as necessary but do so in private when possible.
7. Attempt to reach students in order to make friends with them.

Things to remember:

1. Improvement will usually be slow; remain calm and patient.
2. The family may not recognize the problem.
3. Even though improvement is shown, there will usually be setbacks that should not discourage teachers.
4. Overlook more than you see.
5. Arguing will not solve the problem; it may even strengthen aggressive behaviors.
6. Think over your own feelings and actions toward students in order to remain objective.

Overly Extroverted

Instructional strategies:

1. Help build socially acceptable skills.
2. Point out and praise any personal strong points.
3. Find out as much about the environment of students as is possible.
4. Discover constructive ways to satisfy the students' egos.
5. Discuss with students the effect of overly outgoing actions on others.
6. Insist that students take their turns and not monopolize situations.
7. Have students lower their voices when talking.
8. Have students work in groups or committees under another leader in order to learn good following skills.

Things to remember:

1. Punishment often pushes students further out of the group.
2. Public admonition creates the attention these students desire.
3. The label of "extrovert" should be avoided, as it often provides students with a built-in excuse for their behavior.
4. Students may express outwardly what others hold inside themselves; thus they may have fewer internal emotional conflicts.
5. Students need quiet, calm, and understanding help.

Easily Upset

Instructional strategies:

1. Investigate the health condition of students.
2. Investigate the students' abilities in order to determine whether they can do the work expected of them.
3. Let students express their emotions.
4. Give students the opportunity to release their tensions.
5. Explore the possibility of receiving additional help from other educational specialists.

Things to remember:

1. Emotionally upset persons need to release their tensions and express their emotions.
2. Holding emotions in may further aggravate problems.
3. Emotional upsets have causes -- try to get to the root of the problem.
4. Professional counseling may be necessary.

Overly Shy or Timid

Instructional strategies:

1. Give students daily encouragement.
2. Treat students as people.
3. Teach useful skills that will bring students praise from their peers.
4. Always call on students when they volunteer.
5. Smile whenever eye contact is made with students. Keep the lines of communication open.
6. Assign routine tasks that students can easily master.
7. Encourage students to become interested in some activity at which they can succeed in order to improve their initiative.

Things to remember:

1. Students may have a health problem.
2. Improvement will be slow and growth may be gradual.
3. Students need to know exactly what to do in each situation.
4. Pushing students into the limelight may make situations worse.
5. Students should be given many opportunities to participate, and be encouraged to do so, but never forced.

Nervous

Instructional strategies:

1. Find out about out-of-school environment of students, if possible.
2. Praise students often; give them a sense of achievement and confidence.
3. Ask questions that you know students can answer.
4. Be genuinely friendly.
5. Overlook minor failings in order to create a secure environment for students.
6. Encourage students to develop skills in which they can excel.
7. Show students that they are trusted.
8. Investigate physical and health conditions of students.
9. Always be quiet and calm in working with students.
10. Seek professional advice from skilled counselors.

Things to remember:

1. Tenseness in teachers can often cause tenseness in students.
2. It does not help to embarrass students.
3. Do not stare at or call attention to peculiar habits or mannerisms.
4. Teachers must accept students "as is" at first.
5. Students should not be forced to do things which are too difficult.
6. Nervous conditions may pass with help and increasing maturity.

In conclusion, one important thing to remember is that no single strategy works all the time. Sometimes it may even seem that none of them work because student progress is often so slow. The most secure classroom environment should be provided, while at the same time providing students with the challenge of manageable tasks. Teachers should be sensitive to the conditions of students; they should be consistent in their behaviors on a daily basis to change these conditions; they should be perceptive enough to notice and quickly reward the smallest constructive changes in behavior. And, finally, it should be remembered that teachers are not working alone to help students; other specialists who work with students should be involved if teachers run out of ideas.

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Recommended by Horizon House as books for emotionally handicapped students.

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Walsh, J. Weston. Portland, Maine, 1976.

An excellent resource for low-priced books about emotional handicaps. These books are especially useful to vocational instructors.

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Orange County Public Schools. **Consumer Homemaking for the Educable Mentally Handicapped Learner.** Orlando, 1980.

University of Wisconsin, **Instructional Materials for Use with Educable Mentally Retarded Students Enrolled in Home Economics Classes,** 1975.

Programs

Charleston County Substance Abuse Program, Charleston, South Carolina.
Used by Horizon House as a referral service.

Department of Education, Columbia, South Carolina.
Excellent source of materials and human resources.

Horizon House, Charleston, South Carolina.
One of the few schools in the country for EH students.

Mental Health Clinic, Charleston, South Carolina.
Any local clinic will serve as an important referral service.

Newspaper in Education course, c/o **News and Courier,** Charleston, South Carolina.

Educational service that can be adapted to any vocational program; available from other major newspapers in South Carolina.

Oak Grove Residential Treatment Center, Charleston, South Carolina.

Examples of treatment center for disturbed, neglected, and abused youth.

South Central Bell, Charleston, South Carolina.

Educational service providing films and games designed for emotionally handicapped students; available from many local telephone companies in South Carolina.

Vocational Rehabilitation

Referral service for emotionally handicapped students who have completed school.

Games

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SPEECH HANDICAPPED

Description of Speech Handicaps

Definition

Speech handicaps are those disorders which may limit or interfere with the ability to formulate, express, receive or interpret oral language. According to Dr. Charles Van Riper (1954), speech is defective only when it deviates so far from the speech of other people that it calls attention to itself, interferes with communications, or causes the possessor to be maladjusted. Speech which causes feelings of self-consciousness or inadequacy is regarded as defective speech.

Speech defects may be caused by organic factors such as sensory impairment or structural abnormalities, or they may be caused by problems of muscular incoordination. Often defective speech and language may be caused by a developmental lag or other inorganic factors that include psychological, cultural, or environmental problems.

Types of Speech Disorders

1. Articulation disorders -- Errors of speech found in this disorder include:
   a. Lisping -- Affects the sounds of s, z, ch, and sh.
   b. Substitutions -- Letters are substituted for correct letters in a word. Examples: b for v, as in "riber" for "river"; w for r, as in "wight" for "right"; w for l, as in "yewo" for "yellow"; or th for s, as in "yeth" for "yes." This type of error is commonly found among young children with immature speech.
   c. Omissions -- Consonants are likely to be dropped from the ending, the beginning, or the middle of words (sometimes from all three). At times there is a stoppage of air between vowels (a glottal stop).
   d. Additions -- This disorder is found in children who have invented codes (such as twins), the speech of deaf children who pronounce "sumber" for "summer" or who add a vowel between other syllables, such as "on-a the table."
   e. Distortions -- This disorder is more frequent among older children than omissions or substitutions. The person makes a conscious attempt to say the correct sound but with little effect. Distortions can be corrected by modification of the air stream and shift in oral pressures and mouth positions.
2. Disorders of timing or prosody (stuttering) -- This type of speech impediment may vary among individuals from hesitancy to repetition of parts -- or whole words -- to severe stuttering. Severe stuttering may be accompanied by tremors, struggles, facial contortions, flushing, and fear of speech and speaking situations.
3. Voice disorders -- This disorder includes: pitch -- too high or too low; intensity -- too soft or too loud; quality -- too hard, too hoarse, or too breathy; and nasality -- too little or too much (as if one has a cold).
4. Symbolization disorders (dysphasia) -- This type of disorder is a result of brain injuries, meningitis, head injuries, or strokes. Individuals may not be able to comprehend the visual or spoken word, or they may not be able to express themselves verbally.

5. Multiple speech disorders -- This group includes: cleft palate; cerebral palsy (coordination of the speech muscle has been affected by brain injury); deaf speech (in which pitch, intensity, rhythm, articulation, and symbolization are affected); and foreign accent.

In addition to the above, speech impairments may result from missing teeth, faulty learning, emotional problems, mental retardation, adolescence (voice changing), enlarged adenoids, or chronic sinusitis.

Characteristics of Speech Impaired Students

1. Abnormality in pitch, loudness, and quality of voice
2. Unusually slow or rapid speech
3. Speech generally hard to understand
4. Speech with frequent distortions, omissions and/or substitutions of sounds
5. Stuttering
6. Nasal sounds
7. Shyness -- student rarely volunteers
8. Use of gestures -- pantomine
9. Mispronounciation of common words, omission of words, or misuse of word endings
10. Better silent reader than oral
11. Ability to formulate language in written form, but has problems speaking
12. Social adjustment problems
13. Lisping
14. Difficulty in making sounds come out
15. Indistinct speech
16. Lack of sufficient volume
17. Sound omission
18. Word addition
19. Word distortion
20. Substitution of one letter for another
21. Constant unnatural use of voice as with imitating cars, boats, or guns, which may cause unusual strain on the voice
22. Upper respiratory infections which result in swollen inflamed membranes and repeated colds which may cause sound or voice problems
23. Repeated or prolonged coughing
24. Allergies
25. Infected tonsils
26. General constant poor health
27. Sibling rivalry
28. Parental favoritism
29. Disrupted home and family life
30. Consistently worries or seriously disturbed
31. Speech blocks

If any of the above symptoms are consistenly displayed by students, their names should be referred to the school district's speech clinician for diagnosis.

Unique Needs of Speech Impaired Students

Students with certain speech and language problems (identified by a qualified speech and language clinician) are eligible for speech and language programs on an individual or small group basis -- depending on the severity of the problem.

Those persons need a warm and caring emotional environment in which they are accepted "as they are" by parents, teachers, and peers. Children need reassurance "as they are" that they are important as individuals. Disruptions within the home or within the family relationships will probably cause added strain on those with speech handicaps. Sibling rivalries particularly where high competition exists, or where one sibling is more talented, may pose threats to speech disordered persons, and may cause undue tension. Activities in which speech impaired persons are likely to be more successful and in which more interest is shown should be encouraged. Competition should be kept at a minimum. According to Phyliss P. Phillips (1975), "being aware of the causes of voice problems, tuned in to them, and aware of remedial procedures would do much to help all children to use their voices most efficiently."

Good physical health is important in the development and maintenance of a healthy voice. Some speech impaired children (stutterers) may need more rest than average children. Usually, the more tired a child is, the more pronounced the speech difficulty.

A pleasant home and school environment is important. Discussion of serious or adult problems which children do not understand may cause undue disturbance and worry for children. Encourage children to enter family discussions when everyone is relaxed such as at meal-times. Do not embarrass or pressure people to correct their speech errors. Keep your own speech relaxed and calm. Children tend to copy the reactions of people around them.

Left-handed people should be allowed to use their left hands. If students are ambidextrous, the use of the right hand may be encouraged, but children should not be forced. Undue pressure may cause unfavorable relationships between children and adults and add to children's feelings of insecurity and self-consciousness.

Encourage persons with speech defects to accept the problem, to be objective, and to remain calm when teased. Be frank with children in discussing their speech difficulties. If willing, students may explain their impairments to the class or peers in order to help them to understand and accept the problem. Allowing anyone to imitate or make fun of a speech disorder is both ill-advised and counterproductive.

Speech handicapped students should be allowed to speak in low pressure situations, even if it takes longer to verbalize the meaning. Parents or teachers should never force children to speak or recite as punishment. A public apology for a speech problem is certainly unnecessary. Teachers should not call undue attention to speech impairments in group situations, nor should they constantly "correct" the students. A sincere, friendly attitude toward children with speech difficulties should be developed. Attitudes of the class members should also be controlled. Everyone has differences such as braces or freckles and mockery will not change those differences.

When a speech error has been eliminated by the handicapped, do not necessarily praise students. Every person wants to be normal and usually needs to be treated as if he always spoke normally.

Parents and teachers should not try to specifically identify speech disorders or their causes. Leave speech diagnosis to those persons who are trained in the field. Teachers who are aware of and understand the characteristics of speech difficulties are in much better positions to recognize the problems and frustrations of students, and these specialists can counteract the difficulties posed by the problems. Patience, effective classroom management, and adaptation of instruction for speech impairments will go a long way in helping to meet the special needs of these students.

Strategies for Teaching the Speech Impaired

Any, or most, of the strategies below may be helpful to vocational teachers working with speech impaired students. Consult each student's speech teacher for additional strategies.

1. Encourage students to use audio-visual aids and to verbalize what they have seen.
2. Allow adequate time for students to examine equipment and tools; allow them to name equipment and give verbal descriptions.
3. Avoid asking students to respond orally when performing another task.
4. Encourage students to speak slowly and to take their time to verbalize.
5. Provide time for students to "find the word." Don't supply the needed word.
6. Provide time for pupils to talk about their family and personal events as well as classwork. Understanding family attitudes may provide insights into the emotional behavior of each student.
7. Be tactful and cautious when correcting speech. Causing undue attention may upset or embarrass students.
8. Do not accept gestures for verbal speech.
9. After completing an activity, ask students to describe what has been done.
10. Allow students time for silent reading and verbalizing the summary.
11. Encourage students to ask questions.
12. Articulate naturally -- use simple noun-verb-object sentences.
13. Speak directly to students in a normal tone.
14. Get the attention of students before giving instructions.
15. Tactfully orient the class to individual differences of all students. Encourage the speech handicapped to discuss their feelings and respond to questions concerning speech disorders.
16. Encourage students' participation in extracurricular activities in which interests are shown and in which there are opportunities for success.
17. Remain calm and at ease when speaking or working with speech impaired students. Children tend to imitate the people around them. A calm atmosphere will reduce tensions and undue frustrations.
18. Encourage "show and tell" activities of classwork.
19. Expect and encourage students to be as independent as possible.
20. Expect each student to speak for himself.
21. Encourage the speech impaired and those without speech difficulties to work as a team.
22. Provide experiences in small groups. This can help the speech impaired feel more secure in discussing class activities.
23. Encourage students to verbalize written instructions when asking for clarification, but do not force or pressure students to do so.
24. Encourage students to practice verbalizing words common to the subject being taught. This could be done in a quiet corner or after class.
25. Tape students' speech for play back. As each student listens to the replay of his/her tape, help identify speech problems and make corrections.
26. Provide a warm and caring environment in which students can feel secure and important. Students need reassurance that they are accepted "as is."
27. Recognize early signs of frustrations and pressures being felt by students. A change of pace or an alternate assignment method may be helpful. Change oral work to written assignments to reduce student tension.

28. Be patient, understanding, and supportive by touching students as you walk by, smiling at students, standing near students, etc.
29. Prepare students for new words. Two students may repeat words together.
30. Provide students with a list of questions before class so they can prepare answers. Tell students which questions are to be answered orally; do not force students to respond.
31. Observe students and attempt to discover conditions which appear to frustrate or cause added difficulties. Eliminate or alter these conditions if possible.
32. Reduce student stress by matching teacher expectations and course requirements to student ability to perform.
33. Involve students actively in personal improvement and evaluation of speech disorders.
34. Use students who will be good speech models when pairing students for projects.
35. Give students time to formulate and repeat answers silently before having them speak aloud.
36. Have students repeat a sentence and then add their own sentence.
37. If available, use games in which responses are given orally, as well as written.
38. Use peer tutoring when needed.
39. Stimulate motivation in students by teacher enthusiasm and by planning positive and meaningful activities.
40. Encourage students to participate in all appropriate activities.
41. Reinforce responses by giving immediate feedback. Do not praise speech impaired students unless normal children are receiving praise. Impaired children want to be normal and want to be treated normally.
42. Make accessible to students charts containing key words and phrases so that they may practice their pronounciation.
43. Eliminate undue competition by providing individual assignments and choices. This will help lower frustration levels.
44. Express a sincere interest in the learning and progress of students, both in and out of the classroom.
45. Learn from other teachers the techniques that they have used successfully.
46. Use teacher-made tapes of difficult words for students to use in listening and practice.
47. Use panel discussions whereby several persons discuss a topic in front of a listening group. The moderator poses questions for the panel to discuss and invites questions from the audience.
48. Use problem-solving techniques. Students identify a problem, propose tentative answers, seek supporting evidence, and choose the best solution or explanation.
49. Use projective techniques. Pictures, sentence stems, unfinished stories, or open-ended situations are given to students who respond by giving their own solutions.
50. Use role playing. Dramatize a classroom or instructional situation using student actors.
51. Use a question box. A question is written and deposited in a box. Students then draw questions to answer.

52. Use the inquiry approach. Students ask questions to which the teacher or an identified student answer only yes or no. Students then continue searching for the answer by receiving only yes or no answers.
53. Brainstorming. Develop a "laundry list" of all possible solutions to a problem.
54. Have students work in small groups.
55. Have students work in large groups.
56. Use experiments and labs.
57. Have buzz groups. The class divides into groups of two to eight students in order to discuss a particular topic and then each group reports their results to the entire class.
58. Use case studies of actual work problems and their solutions.
59. Have circular response discussions. Students sit in a circle and each contributes to the discussion in turn.
60. Have students work on committees.
61. Take students on field trips.
62. Have students prepare a scrapbook on assigned subjects.
63. Prepare an exhibit or display of the students' best work, including that of speech impaired students in order to help build their self-respect.
64. Assist speech clinicians by providing children's responses to classroom and extracurricular situations.
65. Establish regular classroom routines for children so that they may avoid anxiety that will cause their speech impairments to become more obvious.
66. Call attention to something pleasant after children have had speech blocks.
67. Avoid interruptions or corrections when students are responding orally. Let students express themselves even if it does take a little longer.
68. Avoid oral assignments for speech impaired students when they are tired or excited.
69. React to speech difficulties in an unemotional manner.
70. Assign responsibilities to those with speech difficulties to help them to build confidence.
71. Do not change the natural handedness of the student.

As useful as the above strategies may seem, they are of little value unless practiced in the classroom. Teachers should always feel free to turn to other teachers and specialists for additional ideas. Remember that there are two important aspects to teaching the speech impaired. First, never call undue attention to impairments. And second, provide students with a means of expressing their skills and knowledge other than a solely verbal one.

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Ms. Lynn Peterson
National Center for Research in Vocational Education
1960 Kenny Road
Columbus, Ohio 43210

A series of five instructional booklets designed to help vocational education teachers and administrators relate to handicapped students.

The Cap Approach to Modifying Vocational Programs for Handicapped Students
Wisconsin Vocational Studies Center
University of Wisconsin-Madison
964 Educational Science Building
1025 W. Johnson Street
Madison, Wisconsin 53706

Contains student booklets in agriculture, business/office, health, home economics, and trades and industry.

Cooperative Work Experiences: An Annotated Resource Guide for Teachers of the Handicapped
Maryland Vocational Resource Center
P. O. Box 5448
McMullen Highway
Cresaptown, Maryland 21502

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Rutgers University - Kilmer Campus
New Brunswick, New Jersey

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Jan Baxter, Instructional Specialist
Special Education and Vocational Rehabilitation
Michigan Department of Education
Box 928
Lansing, Michigan 48904

Contains information on content, criteria, objectives, program models, and vocational rehabilitation services for curriculum development.

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50 Pond Park Road
Hingham, Maine 02043

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Dr. Linda Parish
Vocational Special Needs Program
Interdisciplinary Education
Texas A&M University
College Station, Texas 77843

A module program designed to help vocational educators include handicapped students in the regular classroom. Includes slides, tape cassettes, and text containing learning activities.

It's About Time Series
Wisconsin Vocational Studies Center
University of Wisconsin-Madison
964 Educational Sciences Building
1025 W. Johnson Street
Madison, Wisconsin 53706

A series of booklets covering drug abuse, alcohol abuse, emotional disturbances, hearing impairments, learning disabilities, mental retardation, physical disabilities, speech/language disabilities, and visual impairments.

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Atlanta, Georgia

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1670 East Thirteenth Street
Salt Lake City, Utah 84105

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Ohio State University
Columbus, Ohio 43210

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Research and Curriculum Unit
Vocational and Technical Education
Mississippi State University

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Professional In-Service Education
Division of Information and Publications
State Department of Public Instruction
Educational Building
Raleigh, North Carolina

A list of films for pre-service and in-service staff development. Video and cassettes are also listed.

Agencies

Center for Innovation in Teaching the Handicapped
Indiana University School of Education
2805 East Tenth Street
Bloomington, Indiana 47401
Telephone: (812) 337-5847

Clearinghouse on the Handicapped
Office for Handicapped Individuals
HEW
Hubert H. Humphrey Building, Room 338D
Washington, D. C. 20201
Telephone: (202) 245-1961

Closer Look
National Information Center for the Handicapped
P. O. Box 1492
Washington, D. C. 20013
Telephone: (202) 833-4160

Council for Exceptional Children
1920 Association Drive
Reston, Virginia 22091
Telephone: (703) 620-3660

Curriculum Development and Research
Gallaudet College Division of Public Services
7th and Florida Avenue N.E.
Washington, D. C. 20002

ERIC
P. O. Box 190
Arlington, Virginia 22210

Federation of Children with Special Needs
120 Boylston Street, Suite 338
Boston, Massachusetts 02116
Telephone: (617) 482-2915

Leadership Training Institute/Special Education
253 Burton Hall
University of Minnesota
Minneapolis, Minnesota 55455
Telephone: (612) 373-4854

National Association for Hearing and Speech Action
814 Thayer Avenue
Silver Spring, Maryland 20910
Telephone: (301) 588-5242

National Rehabilitation Association
1522 "K" Street, N.W.
Washington, D. C. 20005

National Rehabilitation Information Center
P. O. Box 136
The Catholic University of America
Washington, D. C. 20064

University Affiliated Facilities
University of South Carolina
Benson Building
Columbia, South Carolina 29208

Vocational Research Institute
1624 Locust Street
Philadelphia, Pennsylvania 19103

Wisconsin Research and Development Center for Individualized Schooling
University of Wisconsin
1025 W. Johnson Street
Madison, Wisconsin 53706

Programs, Projects, and Clinics

Program Coordinator: David R. Johnson
Special Education - Vocational Service Programs
St. Paul Public Schools
St. Paul, Minnesota 55102

Organizational Programs for Exceptional Needs with Inter-Disciplinary Teams Using Prescriptive Procedures
Bell, Norma H.
Huntsville, Alabama 35807

> The described project demonstrates a noncategorical approach to the education of exceptional children: EMR, LD, hard of hearing, speech and language handicapped, visual handicapped, mild physical handicapped, and gifted. Focus is on a planned program of sequential educational tasks. Project personnel and teachers have attempted to devise operational techniques that could be used throughout the school system in implementation of P.L. 94-142.

The Browns Schools: Specialist in Residential Treatment
Director of Admissions
The Browns School
Dept. D-1
P. O. Box 4008
Austin, Texas

Speech Correction Clinic
Columbia College
Columbia, South Carolina

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Dill Beckman Vocational Rehabilitation Center
1400 Boston Avenue
West Columbia, South Carolina

Specializes in the evaluation of persons 16 years old and older.

Speech and Hearing Center
Main Street
Columbia, South Carolina

Private; paying clients only.

U.S.C. Speech and Hearing Clinic
Middleburg Mall
Columbia, South Carolina

LEARNING DISABLED

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LEARNING DISABLED

Description of Learning Disabilities

The regulations for P.L. 94-142 define a specific learning disability as a "disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, which may manifest itself in an imperfect ability to think, speak, read, write, spell, or do mathematical calculations. The term includes such conditions as perceptual handicaps, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia. The term does not include children who have learning problems which are primarily the result of visual or hearing, of motor handicaps, of mental retardation, or of environmental, cultural, or economic disadvantages." (Part 121 a.5 of Title 45 of the Code of Federal Regulations.) It is very important to remember that learning disabled students usually possess an average or, in some cases, above average I.Q. Their inability to learn is not due to recalcitrance or retardation, but rather to a disability that affects how they learn.

According to Tindall (1980), some of the most common characteristics exhibited by students with learning disabilities are:

1. Poor ability to sustain attention to the work being done
2. Impulsive behavior
3. Inability to think or remember
4. Poor organization of tasks
5. Inability to monitor one's tasks
6. Inability to maintain a train of thought
7. Poor physical coordination
8. Hyperactivity and hypoactivity
9. Difficulty in reading, writing, arithmetic, and/or spelling
10. Distractibility
11. Extreme variation in functional ability
12. Difficulty in handling language
13. Speech and hearing disorders
14. Lack of resourcefulness

Weiss and Weiss, in their studies of disabled students, have included a learning disability identification guide from the learning disability report of the Robert E. Bell Middle School in Choppaqua, New York (Weiss and Weiss, 1974). This guide, stated below, provides an understanding of behavioral characteristics of learning disabled students. It is helpful for teachers to recognize the specific area of learning disability of each student in order to teach that student more effectively. Each student's special education teacher should also be consulted to provide information about the specific nature of the disability.

Learning Disability Identification Guide

Poor Visual Perception Functioning

1. Student consistently reverses letters and words, either in reading or writing.

2. Student has difficulty in written expression.
3. Student has poor penmanship.
4. Student cannot follow written directions.
5. Student's written work is poorly organized.

Poor Auditory Perceptual Functioning

1. Student cannot follow oral directions.
2. Student cannot tell a story in proper sequence.
3. Student has difficulty orally expressing ideas which he/she seems to understand.
4. Student is inattentive during oral presentations of classwork.
5. Student's written expression is better than oral expression.
6. Student has poor comprehension of oral language.

Marked Memory Problems

High distractibility, poor attention, or general inability to carry out directions independently

1. Student has a short attention span.
2. Student repeatedly fails, on a day-to-day basis, to recall what has been taught.

Hyper-or hypoactivity levels which seriously interfere with educational progress

1. Student may become silly or angry more often or more violently than other students in the classroom (hyperactivity).
2. Student may become more passive, daydream, or withdraw (hyporactivity).

Nearly all learning takes place either by seeing, hearing, or participating in hands-on activities. Some students learn more effectively by seeing the information. Some retain information better by hearing the information. Others need to be able to become involved in the performance of the activity in order to understand the concept being taught. It is important for teachers of learning disabled students to realize how each student learns most effectively. Baxter (1975) has developed an informal test which shows the particular style of learning used most effectively by individual students. Tindall (1980) has adapted this test for vocational students. Use of this test to identify effective learning styles for learning disabled students can be helpful in finding the most appropriate teaching method for a student having learning problems. The test is as follows:

Test for Three Types of Learning

Test Ground Rules

To give the test, you need:

1. A group of not more than 15 students as it is difficult to observe more than that at one time.
2. A list of the students' names which you can mark as you observe their reactions.

V = Visual Learner
A = Audio Learner
K = Kinesthetic Learner

Reactions to watch for:

Visual Learners will usually close their eyes or look at the ceiling as they try to recall a visual picture.

Audio Learners will move their lips or whisper as they try to memorize.

Kinesthetic Learners will use their fingers to count off items or write in the air.

Conducting the Test

Start by telling your students that you are going to give them a test to determine what kind of learners they are: VISUAL, AUDIO, or KINESTHETIC.

This test consists of pretending that the students are going to the toolroom to get some tools for you. First, you will write the list on the board, allowing the students to watch you, but they must not copy it. Next you will give them the list orally. You will not write it and neither must they. Then, you will dictate the list to them orally and they will write it down.

After each presentation, you will ask your students to repeat the list to you if they wish. If a student is not able to repeat the list, tell him/her not to worry. The response to your request should be voluntary and the list does not have to be given back in order.

Note: The most predominant characteristic is used as a symptom.

The specific test or tests in which the student has the highest recall is a reinforcement of his/her native way of learning; however, the symptoms are the prime indication.

First Presentation	List
1. Write the list on the board while the students are watching. Do not let them write.	Hammer
2. Allow students to view the list for approximately one minute while observing their reactions. Mark the symptoms after the students' names.	Pliers
Symptoms:	
VISUAL LEARNERS -- Close their eyes or look at the ceiling. (V after name)	Crescent Wrench
AUDIO LEARNERS -- Move their lips or whisper. (A after name)	

KINESTHETIC LEARNERS -- Count the items on their fingers or write in the air. (K after name)

3. Erase the list.

4. Ask, "Who would like to repeat the items to me?"

5. Observe that the Visual Learners will volunteer first.

6. Call on them to recite ORALLY, one at a time. (Note that after a few students have recited, a few more timid hands will go up. These usually are AUDIO LEARNERS who have learned the list, not from seeing it, but from hearing the other students say the items.)

7. As you notice a student's symptoms, put a "V," "A," or "K" after the student's name.

Second Presentation

1. Dictate the list ORALLY (no writing by either teacher or students). Repeat the dictation a second time, pausing for a moment after each item.

2. OBSERVE that the VISUAL LEARNERS will close their eyes to try to SEE the items. The AUDIO LEARNERS will whisper each item as you dictate it. The KINESTHETIC LEARNERS will use their hands to mark off the number of items or will write in the air.

3. Ask, "Who would like to repeat the list?"

4. The AUDIO LEARNERS will be the most eager to respond, although other students will try to repeat the items you have dictated.

5. Make appropriate notation of "V," "A," or "K" after the students' names as you notice their reactions.

Third Presentation

1. Tell the students to have pencil and paper ready to WRITE the list as you dictate it ORALLY. Tell them you will not count spelling. In fact, spell the words as you dictate.

Screwdriver

Welding Rods

Level

Battery Tester

Square

Tape Measure

Screwdriver

Chalk Line

Vise Grip

Level

Hammer

Paint Brush

Pliers

Chalk Line

Plumb Bob

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2. After you have finished dictating the list, tell the students to rewrite the list, and to look at the one they have written from your dictation.

3. When they have finished rewriting the list, tell them to turn the paper over and WRITE THE LIST FROM MEMORY.

4. After they have finished, check to see which students have been able to repeat the list wholly or in part.

5. Notice that students who are unsuccessful in either the first or second presentation of the test are frequently the first ones finished.

Hand Saw

Tape Measure

Welding Rods

Power Drill

Pliers

Square

(The test may be repeated, using numbers. Most students have a different form of recall for numbers than they have for words.)

Evaluation of the Test

1. A teacher will have a better understanding of the individual differences of the students.

2. The teacher can encourage the students to find their natural way of learning.

After gaining an understanding of the characteristics of students with learning disabilities, it is important for vocational teachers to work with the students to help them compensate for their disabilities in a way that is productive for them. However, if teachers see the disabilities as insurmountable obstacles in the vocational areas being taught, this should be addressed early in the course so students can be properly guided into other areas in which they can be successful.

Unique Needs of Students with Learning Disabilities

The approach used with learning disabled students must be one having realistic student goals and expectations. This takes an understanding of each student's specific learning disability, and how this learning disability has caused past failure for that student. Teachers can gain this information from each student's guidance counselor, special education teacher, or parents. The results of not taking the time to gain this information will probably lead to the continuation of failure which can cause both students and teachers to become anxious and frustrated. Students might also become withdrawn or aggressive when confronted with unrealistic expectations that grow out of a lack of teacher understanding about their disabilities.

According to Mann and Suite (1974), panic-coping is probably one of the most critical areas of concern pertaining to students who exhibit learning disabilities. They state that pressure from parents, teachers, and peers can result in a continual state of frustration with accompanying anxiety. This frustration and anxiety can become associated with the one specific learning task which brought on the anxiety, or it can be generalized to many areas of learning.

Many learning disabled students display a low tolerance for frustration. This is usually a by-product of having repeatedly failed at many previous tasks. They may also have difficulty concentrating or have a short attention span. These characteristics may also be by-products of past failure experiences with inappropriate and difficult assignments. Because of these frustrations from past failures, it is necessary for these students to experience success. From the introduction of the course, they need to be able to see a specific area in the vocational course being taught in which they will be able to succeed.

The use of some additional equipment can be helpful in teaching students with learning disabilities. Tape recorders can be helpful to students who have trouble reading or learning information visually. They would also enable teachers to move quickly through the material being presented without leaving slower students behind. Use of an overhead projector for writing material for the student's information can help learning disabled students get information after others have finished by copying information directly from the transparency. Calculators for students who have problems with basic math skills may help students function in a vocational area requiring math skills.

Still, learning disabled students may occasionally act out frustration inappropriately. A "time-out" or restricted area away from other students can help a student gain control if time and space away from others is needed. This area may also keep a student from being easily distracted by others.

An overall relaxed, but firm, attitude toward learning is important in helping learning disabled students succeed in a vocational setting. Students must be very aware of classroom procedures and safety rules necessary to function in a particular vocational area. These procedures and safety rules must be clearly explained and reviewed with students until teachers are sure they understand the importance of these factors. These rules must then be consistently enforced as for other students.

Learning disabled students should work together with either their teachers or experienced students when using potentially dangerous equipment until the teachers are comfortable with the student's ability to accept the complete responsibility for proper use of the equipment. The safety rules and procedures for using machinery in the classroom must be repeated frequently and clearly with each piece of machinery used. Teachers should not expect learning disabled students to be able to transfer these facts from one piece of equipment to another.

Because of their disabilities, these students will require much patience and understanding. It may take a longer time or different or varied approaches for them to understand how something works. This may not seem worth the effort unless teachers see inappropriate behaviors or inabilities to learn as consequences of specific disorders which have caused prior failure for students. Then teachers can begin to change this cycle of failure into a successful learning experience.

Strategies for Working with Learning Disabled Students in a Vocational Education Classroom

The first step in successfully teaching students with learning disabilities is to gain an understanding of the reasons students are having learning problems. Teachers can assess probable causes of inability to learn and inappropriate behavior by noticing specific factors that tend to cause the behavior. Information is also available from parents, guidance counselors, and special education teachers to help determine the specific learning disabilities. Teaching methods which appeal to the students' strengths can help them learn, as well as bring about more desirable behaviors.

There are some teaching methods and strategies which can help compensate for the difficulty that learning disabled students have with learning, and can help them achieve success in vocational classes. No one method of teaching is going to work with all learning disabled students having problems learning. It is necessary for teachers to try different approaches until some are found which seem to help students overcome their barriers to learning. Some strategies that teachers may employ to help learning disabled students be successful in vocational classrooms are listed below.

Strategies for Presentation of Material

1. Give students the definitions of vocabulary to be used before the actual presentation of the material. The terminology will then sound somewhat familiar to students as it is being used in the context of the material to be learned.
2. Work with learning disabled students after a verbal presentation of new material to help them pick out the main points to be learned. Teachers may wish to provide students with an outline of the lecture stressing the main points. Then help the students relate that information to practical applications.
3. Students can also work together using experienced students as peer tutors.
4. Keep directions short, using simple language. Directions should be repeated for each step to be completed.
5. Use audio tapes of written materials to help students who lack reading abilities.
6. Involve more senses in the learning process to increase the students' ability to retain information. If the key points can be demonstrated at the same time they are being heard, students will have a better chance of retaining the information.
7. Organize lecture or demonstration information in such a way that it will cue students to important facts. For example, the three major areas are.... or, the most important factors to consider are....
8. Print any information written on the chalkboard.
9. When using the chalkboard, use one side of the board at a time. Leave that information on that board as you continue to another board to give students a chance to copy as much as possible.
10. Underline important information in textbooks. Allow learning disabled students to use these underlined texts.

11. Use as many visual aids as possible for students who excel at visual learning. Help these students to visualize the spoken word. When verbalizing information, help students picture what you are saying. The use of the chalkboard, overhead projector, films, filmstrips, and video tapes may be helpful to visual learners. Also it may help if pictures and diagrams can be used in place of written directions.
12. Review information frequently.
13. Relate information already learned to new information.
14. Help students understand a concept rather than memorize a lot of material.

Strategies for Acquiring Skills

1. Allow learning disabled students access to measuring instruments so that they may practice basic measuring skills. Special education and math teachers can be of help in teaching these important skills.
2. Relate information given to students to hands-on activities as soon as possible.
3. Provide job-related field trips for students so that they can relate learning to actual job experiences.
4. After a demonstration, have students complete the task demonstrated as soon as possible. Students needing repetition of information can watch another student complete the task and then complete the task as done by the other student.
5. Students who have trouble understanding basic directions, such as left/right or clockwise/counter clockwise, may better relate directions to fixed objects in the room that they can remember.
6. Activities and tasks should not be lengthy because of short attention spans. Large projects should be broken down and completed in several steps.
7. Checkpoints should be clearly understood by students to eliminate costly mistakes or failures. Student helpers may aid with this checking.
8. Give only one or two directions to students at a time. Then have students put those directions in their own words to check understanding before they actually perform the activity.
9. Video tape demonstrations of skills to be learned. Allow students to view the tape as often as necessary to learn skills.
10. Prepare flip charts that describe (both visually and verbally) the entire process by describing only one or two steps per page.
11. When possible, develop slide-tape presentations that show the process. These slide-tape lessons can be valuable to any student (such as an absentee).

Resource Aids

1. Have special education teachers help locate supplementary texts which have high interest levels but low vocabulary levels.
2. Cooperative instructional arrangements may be made between the vocational teachers and special education teachers. New vocabulary or repetition of assigned work can be reinforced by the other teachers. Special education teachers usually appreciate the opportunity to relate the practical teachings of vocational education to material in their classes. A referral form may be very helpful for this process.

3. Allow students to use calculators, when possible, to eliminate simple math errors.
4. Digital clocks can be used for timed activities for those students who cannot tell time. Timers can also be set for timed activities.
5. Use flashcards to reinforce learning of symbols, abbreviations, equipment, etc.
6. Remember that flip charts, video tapes, and slide-tapes can also be very useful.

Safety

1. With each piece of machinery used in the classroom, repeat safety rules and procedures frequently and clearly.
2. Color-code or picture-code safety equipment that is to be used with machinery.
3. Physically demonstrate the safety rules and, when safe, role play infractions.

Classroom Organization

1. Shop or classroom equipment can be color-coded or picture-coded to assure proper replacement after use.
2. Remove as many distractions (colorful posters, models, etc.) from the lecture area as possible.

Note-Taking

1. Demonstrate note-taking techniques to help students organize the most important facts. Write key words on the chalkboard.
2. Duplicate an outline of information to be gained from a lecture, demonstration, film, etc. Leave space for students to fill in details.
3. Insist on proper organization of materials, notes, etc. Check frequently to see if this is being done.
4. Have high-achieving students take notes with carbon paper to share with learning disabled students.

Testing

1. Special education teachers may be asked to administer tests to students in such a way that they are tested on knowledge of the subject matter, not on their ability to read.
2. Instead of examinations, allow students to demonstrate practical applications of the knowledge. Try performance testing.
3. Do not overemphasize correct spelling or grammar if it is not an essential part of the vocation being learned.
4. If possible, give students oral tests or have tests recorded so students can understand the questions. They may answer questions orally on a tape recorder for later grading.
5. Multiple choice questions and fill-in-the-blank questions (with a list of possibilities) will help evaluate learning which has taken place instead of the students' ability to write.

Behavior

1. A separate or "time-out" area may be used for students who are hyperactive talkers. Arrange an area where these students can be removed from a situation where they disrupt other students and where they may work without an audience.
2. Students whose hyperactive behavior keeps them and/or the rest of the class from learning may work individually with their teachers or be closely observed while working with competent partners.
3. Frequently and immediately reward good behavior or a job well done.
4. Develop behavior contracts with students that specify the behaviors necessary for success in the actual vocation. These contracts should be developed with the students (who must be helped to understand the negative consequences of the undesirable behaviors) in order to gain student commitment for improvement. The contract should be very specific on the following points:
   a. the behaviors to be demonstrated by the students
   b. the frequency with which these behaviors are to be demonstrated (for example, "the student will seek out assistance, rather than act out anger, when unable to complete a task at least half of the time during the next month, 75 percent of the time in the second month, and all of the time after that.") As students master the behaviors, the time schedule may prove unnecessary, or it may need revision.
   c. the rewards for desirable behavior (such as five minutes of free time to be spent on a personal project, surplus materials from the course, positive notes to the parents, etc.)

   After each contract is signed by the teacher and student, it should be rigidly adhered to.

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DISADVANTAGED

Description and Characteristics of Disadvantaged Learners

Legal Definition

Recognizing the strengths and weaknesses of disadvantaged learners is a necessary first step for planning and implementing vocational programs for these special needs students. Specific legal definitions and eligibility criteria for classifying students as disadvantaged are available from local, state and federal education agencies, and vocational administrators who may wish to secure these definitions as explained in P.L. 94-482. The classification system for the disadvantaged is designed to include all persons who have academic or economic handicaps and who require special services and assistance to enable them to succeed in vocational education programs, Section 195 (19). This excludes youths and adults with mental, physical, or emotional handicaps who are served in special education programs under the domain of P.L. 94-142.

Further interpretation in the **Federal Register**, Vol. 42, No. 191, Section 195 (16), defines "academic disadvantaged" to mean that persons:

(1) Lack reading and writing skills;
(2) Lack mathematical skills; or
(3) Perform below grade level.

"Economic disadvantaged," as defined in Section 195 (16), means that:

(1) Family income is at or below national poverty level;
(2) Participants, or parents or guardians of the participants, are unemployed;
(3) Participants, or parents of participants, are recipients of public assistance; or
(4) Participants are institutionalized or under state guardianship.

For special vocational programs, program modifications, and related services using 20 percent disadvantaged set-aside monies and/or Subpart 4 disadvantaged funds, participants must meet the following conditions.

- They are excluded from regular vocational programs because of the effects of their disadvantages or
- They show evidence of being unable to succeed in regular vocational programs because of the effects of their disadvantages, and
- The effects of their disadvantages are identified by qualified professional persons (teachers, counselors).

The categories of disadvantages have been selected for ease of identification and classification by classroom teachers and the categories may be used for reporting information to local and state administrators. The statements following each category are provided as examples of the types of disadvantages in that category.

Academically Disadvantaged

These individuals do not have the specific academic skills needed to succeed in vocational programs. Due to poor educational preparation, they require supportive services or special programs to meet course requirements or to continue and complete the program.

It is important that the academic skills actually be required for the occupational areas in which these individuals plan to be or are enrolled. In other words, the academic background in an electricity program where mathematics is necessary is different from that of a clerk-typist's course where reading and writing are important.

There are two cautions here. First, students may not be classified as disadvantaged because they do not have the prerequisites for a vocational program. For instance, persons who wish to enter an electronics course but never took science courses cannot be categorized as disadvantaged for this reason alone. Second, if through testing and observation, persons show little or no manual dexterity or other basic vocational requirements, they should be counseled and encouraged to enroll in programs in which they have demonstrated ability and interest.

Limited English-Speaking and Comprehension Ability:

Individuals in this group experience sufficient difficulty with English so that their capacity to learn is reduced to the point that they do not comprehend course material.

Reading and/or Writing Deficiency:

Individuals in this group experience sufficient difficulty with reading and writing English so that their capacity to learn vocational education subject matter is reduced significantly.

Computational Deficiency:

These individuals have an educational background in mathematics which is not adequate for the level required by vocational education programs.

Economically Disadvantaged

Individuals in this category are not succeeding or cannot succeed in regular vocational education programs for one or more academic reasons, as described above, and they or their parents or guardians are public assistance recipients, their family income is at or below poverty level, they are unemployed, or they are institutionalized. It is more difficult to pinpoint the effects of poverty which do not affect academic performance or ability to succeed.

One such effect may be on attitudes, motivation, or behavior which would affect students' ability to succeed in a program and, therefore, reduce chances of subsequent employment. An expenditure for the services of a special counselor to work with such students could be beneficial. Special pre-service and in-service training for teaching and support personnel could also help to enable the staff to cope with students whose economic circumstances have hindered their educational progress.

Obviously, while school systems cannot solve the financial problems of those in a low income category, circumstances do arise when students or potential students cannot attend class because they do not have proper clothing, food, or a means of transportation in order to get there. Several possibilities are suggested such as contact with welfare and social/service agencies, notification of school authorities, and referral to Vocational Rehabilitation.

Under no circumstances can the funds of the Federal Vocational Education Act be used to provide food, lodging, medical and dental services (or other items such as clothing which students may need, but which are not directly related to the provisions of vocational education). Provision of such services should be made through arrangements with other agencies. Therefore, the major purpose of vocational education for the disadvantaged is to provide special needs students with a means of learning occupational skills in accordance with the students' capabilities.

General Characteristics

Vocational instructors should realize that good teaching takes into account the ways that students learn. Not everyone learns in the same manner, as the learning process is subject to wide variation in students' learning patterns, styles, and abilities. Benjamin Bloom (1976) proposed a significant model of school learning. His theory deals with three important elements of learning: student characteristics, instruction, and learning outcomes. Disadvantaged learners generally exhibit specific learning characteristics that affect their learning processes. Conte and Grimes (1969) summarize the learning characteristics of the disadvantaged as follows.

1. The disadvantaged seem to learn better by actively participating (i.e., seeing, touching, etc.) rather than by listening passively.
2. The disadvantaged are usually motivated to learn by someone or something besides themselves.
3. The disadvantaged are more apt to learn concrete facts easier than they can grasp abstract or theoretical matters.
4. The disadvantaged do not allow themselves to become limited by time.
5. The disadvantaged use inductive rather than deductive reasoning.
6. The disadvantaged are slow, careful, patient, and persevering (in areas of importance to them).
7. Often the disadvantaged are inclined to communicate through actions rather than words.
8. Many disadvantaged youth are found to be deficient in listening skills.
9. The disadvantaged respond well to immediate and practical application of what they have learned.
10. Disadvantaged youth are found to have short attention spans and experience difficulty in following complex directions.

11. Generally, disadvantaged youth are characterized by significant gaps in knowledge and learning.
12. Disadvantaged youth often lack the experience of receiving approval for success in tasks.

As the above are general characteristics, individual learners must be individually characterized. Along with problem areas, vocational teachers should also identify the personal strengths and weaknesses of each student that may affect their learning process.

Attendance

Disadvantaged students have frequently had a history of poor attendance. When at school, they may not be punctual for classes or even attend all classes. However, when confronted with employability requirements and opportunities to participate in work experience programs, disadvantaged learners usually improve in school attendance.

Attitudes

In general, a negative attitude toward learning (exhibited as an indifferent and passive role) can develop into unacceptable personality habits that affect employability. Attitudes are improved when disadvantaged learners are helped to succeed and when tangible rewards are given as reinforcement. As students experience success, an increasing amount of responsibility will be accepted by them and this can be used to promote a good working attitude.

Authority

Characteristic of many disadvantaged students is a history of delinquency and a rebellion against authority. Students may defy rules, be suspicious of teachers, reject supervision, and be overly sensitive to constructive criticism. If vocational teachers recognize and are sensitive to the needs of disadvantaged students, strong personal relationships between students and teachers could develop into positive atmospheres for learning.

Goals

Disadvantaged learners tend to have low levels of aspiration and inabilities to define and solve problems. Difficulty is exhibited with understanding the relationship of school experiences to long-range life goals. Additionally, a preference is generally expressd for either low or high risk situations rather than situations that remain stable over long periods of time. On the positive side, disadvantaged learners will work toward achieving employability skills when vocational personnel assist in setting realistic, performance-based objectives that relate to the real work setting.

Image

A negative self-image and a lack of self-confidence are often expressed by disadvantaged students as a result of continual failure. As a result of low self-concept, apprehensiveness may occur when new learning/training settings are

encountered, and outwardly defensive verbal expressions may be exhibited. On the other hand, disadvantaged learners express their feelings openly and honestly, and they also show a willingness to learn when the practical value of the content has been accepted.

Learning Styles

Disadvantaged learners often become easily bored, have short attention spans, and have difficulty relating current instruction to previous learning. Learning occurs more easily when the basic needs of students are satisfied, instruction is well structured and organized, real and concrete learning experiences are provided, a multisensory approach is used, and students are encouraged to become actively involved in learning activities.

Manual Dexterity

Due to a lack of tools in the home environment, and a variety of other reasons, disadvantaged students may have difficulty with fine motor coordination, with manipulation of small objects and tools, and/or making placing and turning movements with their hands. However, disadvantaged students are generally very visually and physically oriented, and this sometimes allows them to acquire these skill deficits.

Social Relations

Disadvantaged students may demonstrate apparent anti-social and anti-school behaviors due to cultural isolation that causes a lack of true understanding of mainstream society's values and customs. Acceptance by other individuals is often rejected due to these unfamiliar customs. Positive attributes include the cooperation and mutual aid provided by many families of disadvantaged students, the cohesiveness of collective family or group values, and the perception of equality among group members.

Unique Needs of Disadvantaged Learners

Unlike students with some handicapping conditions, disadvantaged learners have no physically identifiable needs that set them apart as a distinct group. All students have unique needs, and this is certainly true for the disadvantaged. Everyone has a different learning style which evolves from a combination of hereditary, socioeconomic, and educational factors. The "special needs" of some students, however, will require additional considerations and some modifications in their educational programs.

Disadvantaged students in vocational education require no adaptions in the physical equipment and structure of the shop area. The most obvious characteristic of the disadvantaged student population is the discrepancy between their expected level of achievement and their actual level of achievement. Disadvantaged learners usually display one or more significant deficits in the learning process (see Section 1, Definition and Characteristics) that require specific educational techniques. These learning deficits vary considerably from student to student depending on the types of learning and behavior characteristics each student has acquired during the educational process. Students who cannot learn from one set of instructional strategies may be able to learn under another set of circumstances. It is, therefore, important that vocational instructors determine the specific learning needs of each student. A common mistake made in working with disadvantaged students is trying to teach them as though they all share a common learning need.

Instructional Strategies for Disadvantaged Learners

There should be an individualized match between students' learning characteristics and their educational programs in order to enhance the learning style of students. In vocational education, individualized modifications of the educational program should be made available for disadvantaged students whose educational and/or socioeconomic limitations hinder success in regular vocational programs. One type of program that meets the requirements of the law governing the education of disadvantaged learners is the resource model. In this setting, disadvantaged learners remain in regular vocational settings until vocational instructors determine that they need specially designed assistance in order to succeed in the vocational programs.

Caution should be exercised when designing programs to adequately serve the disadvantaged. Each student should be referred and evaluated to determine if his/her disadvantage is a handicap to learning. Program coordinators and/or directors must be certain that students remain in the least isolated learning environment and receive sufficient assistance to make success possible. Remember, students qualify for participation in special-assistance programs only when they are disadvantaged to the extent that they cannot succeed in regular vocational education programs.

Referral Process

Referrals for assistance should be made only after vocational teachers have identified and recorded the characteristics of potentially disadvantaged learners. Vocational instructors should use the referral process established by their local education agency (LEA). Oftentimes, there are no guidelines available. If this is the case, the following paragraphs include suggestions for utilizing or designing referral guidelines for the LEA.

1. Analyze the referral process and decide what specific student information is necessary for categorization as disadvantaged.
2. Identify "contact persons" who will coordinate remedial resources for the disadvantaged. Contact persons may include guidance counselors, school administrators, vocational education supervisors, vocational resource teachers, special needs liason persons or an established review committee composed of representatives from the school and district, school psychologists, and pupil personnel workers.
3. Review the referral forms for completeness. Acceptable referral forms should include the following.
   (a) name, address, age, birthdate, sex, race, school, grade placement, and program of student
   (b) names, addresses, occupations, and phone numbers of parents or guardians (optional)
   (c) date on which referral form is submitted
   (d) name and title of referring person(s), including teachers, parents, and community service personnel
   (e) reason for the referral including a detailed description of specific problems
   (f) student strengths
   (g) special services the student is already receiving

(h) recommendations for special services and/or programming
(i) name(s) and title(s) of the contact person(s)
(j) disposition of the referral

NOTE: Figures 2A, 2B, and 2C on the following pages show typical referral forms. These suggestions (Figures 2A and 2B) are recommended by the University of Maryland, Department of Industrial Education and the Maryland Department of Education, Division of Vocational-Technical Education.

In adherence with the guidelines of the LEA, vocational instructors should complete referral forms and send them to the appropriate contact personnel. The contact personnel then determine the eligibility of the referral students for special services, and communicate this information to other appropriate individuals. In most situations, contact persons are predetermined by LEAs and/or vocational center directors to coordinate special needs programs.

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Figure 2A

Student Referral Form

Vocational Education

Student's Name: _____ Grade: _____ Date: _____

School: _____

Person Initiating the Referral: _____

Title: _____

Please Specify the Reason for this Referral: _____

_____

_____

_____

_____

_____

_____

_____

_____

Special Services Presently Received: _____

_____

Received By: _____ Title: _____ Date: _____

Action Taken:

Adapted from Evans, R. N., L. Albright, and J. Fabac. **Procedures for Identifying Students with Special Needs** (Urbana-Champaign, Illinois: University of Illinois, Bureau of Educational Research, 1978).

Figure 2B

Disadvantaged Learner Referral Form

Directions: Please complete as much of the information below as possible. Sources of information to be used in completing this form include: pupil school records, classroom observations, and individual counseling with the student.

Student Name: _____ Grade: _____ Referral Date: _____

Address: _____ Sex: _____ Birthdate: _____

Age: _____

Reason for Referral Action: _____

_____

_____

PARENTS: Father's Name: _____

Address: _____ Telephone: _____

Mother's Name: _____

Address: _____ Telephone: _____

Guardian's Name: _____ Relationship: _____

Address: _____ Telephone: _____

EMPLOYMENT: Father: _____

(occupation and place of employment) Mother: _____

Guardian: _____

PARENTS CONTACTED: _____ Yes _____ No

STUDENT EMPLOYMENT GOALS: _____

_____

SPECIAL SERVICES BEING RECEIVED: _____

_____

RECEIVED BY: _____ (Title): _____ (Date): _____

ACTION TAKEN:

Adapted from Phelps, L. A. **Instructional Development for Special Needs Learners: An Inservice Resource Guide** (Urbana-Champaign, Illinois: University of Illinois, Department of Vocational and Technical Education, 1975).

Date _____

Figure 2C

Referral for Vocational Resource Instruction

To be completed by referring teacher:

Student's Name: _____ Date of Birth: _____

Age: ___ Sex: _____ Home School: _____ Grade: _____ HR/Sec.: _____

Name of Course: _____ Time of Course: _____

Instructor: _____

Reason for referral: _____

_____

Due to (check one): _____ weak in reading or writing skills

_____ weak in mathematical skills

_____ weak in language/communication skills

_____ performs below grade level

What do you feel that we (vocational instructor and resource instructor) can do to help this student? _____

_____

_____

_____

To be filled in by lab instructor:

Student qualifies for lab assistance as:

_____ Educable Mentally Handicapped _____ Trainable Mentally Handicapped

_____ Speech & Language Handicapped _____ Hearing Handicapped

_____ Orthopedically Handicapped _____ Visually Handicapped

_____ Emotionally Handicapped _____ Learning Disabled

_____ Disadvantaged

In brief, the steps in the referral process include:

1. Identifying the describing potential disadvantaged students.
2. Reviewing the referral procedure.
3. Completing the referral forms.
4. Routing the referral forms to appropriate personnel.
5. Participating in the decision-making process.
6. Following up on the disposition of the referrals.

If referred students meet any one of the criteria mentioned in the definition of "disadvantaged" (see section 1), they qualify for placement in special needs programs. Due to the fact that the students have never been identified as handicapped by the LEA, individualized educational plans (IEPs) including vocational components are not required by law. However, federal guidelines suggest that progress reports be maintained on the students. Figure 2D is a sample progress report. Progress reports should be completed each time special assistance is needed by students.

There should be coordination between vocational instructors and special needs personnel. The course of remediation should be directly related to the presentation of materials in the vocational classroom. Once weaknesses or deficiencies are identified by vocational instructors, plans for remediation should be developed immediately so that the normal learning process taking place in the vocational shop setting will not be disrupted. Special needs instructors should schedule conferences with vocational instructors to discuss the time and nature of the individualized remedial instruction. Figure 2E is a sample form that can be used to map the plan of instruction. This information can also be used to aid special needs personnel in understanding the vocational course requirements for disadvantaged students.

To do an effective job of developing educational plans, vocational instructors and special needs instructors need to look at the students' levels of learning development to determine where they have weaknesses in the learning process and to determine what specific problems prevent them from learning a given task. Although students may appear to have normal achievement possibilities in some areas of learning, other areas may be weak to the extent that remediation is necessary. Special needs instructors must address the weaknesses of students, as they interfere with the learning processes taking place in vocational courses.

In the strategy of remediation, special needs instructors must capitalize on students' strongest learning processes in order to teach vocational concepts. Although overcoming students' weaknesses in the learning process is not the primary concern of vocational special needs instructors, time spent developing a strength in some area of learning may enable students to have more positive attitudes that may result in increased interest and attendance in vocational programs. As students begin to enjoy success in their vocational courses, special needs instructors may include remedial work to reinforce each student's deficit areas.

Consequently, the effectiveness of a special needs program is based on the relationship established between students and instructors. If instructors are warm, responsive, and flexible to the needs of students, students will gain a sense of participation in the whole tutorial process. Instructors must strive for success even if success appears minor in order to offset the many failures that many disadvantaged students have experienced in the school setting.

Figure 2D

Progress Report

Student's Name _____ Grade _____ Home School _____

Homeroom _____

Course _____

Course Instructor _____ Resource Instructor _____

Reason for referral:

Objectives:

Procedure, Method, Materials:

Evaluation Criteria:

Total Time Required:

Instruction in the: Learning Lab _____, or Shop _____

One of the primary responsibilities of those teaching disadvantaged students is to help students believe that success in school can be achieved. A sociological theory applied throughout education today is the idea that disadvantaged students do not know how to play the role of student in public schools oriented toward the middle class. Therefore, each step taken by school personnel to help students build a positive academic self-concept will reap benefits that should include a greater desire to learn and a greater incidence of learning.

Basic Instructional Strategies

Raymond Wlodkowski defines some basic strategies to develop a better academic self-concept for disadvantaged learners.

Strategy 1: **Guarantee successful learning.** Wlodkowski espouses Seligman's theory that students with low academic self-concepts have learned to be helpless in school — to believe that nothing they can do will be right. Consequently, making certain that students have successful learning experiences can help change these feelings. Here are some guidelines.

1. Segment instruction into units or increments that will definitely allow students to progress in their learning.
2. Give clear enough cues so that students will know where in the instruction they are and where they are expected to go.
3. Give students immediate and specific feedback for their learning responses.
4. Make sure students know the criteria by which learning will be evaluated.

Strategy 2: **Encourage students.** Encouragement shows students that teachers respect them as people (no matter what students learn), that teachers trust in their efforts to learn, and that teachers, above all, **believe** that they **can** learn. Students need to be accepted and valued as human beings without reference to what they learn in class.

Strategy 3: **Emphasize students' personal roles in their learning.** Students realize their identities through their relationships with family, friends, other students, and teachers. The classroom peer group has a tremendous influence on self-appraisal of students. Opportunities should be made in which disadvantaged learners can experience success with their classroom peer group.

The Learning Environment

The atmosphere of the classroom or lab setting should be relalized and conducive to both instruction and learning. The wide range and variety of materials and supplies required to meet the different needs of individual disadvantaged students may make it necessary to have separate or designated spaces outside the vocational shops. A distinction should be made between those situations that require a teacher-directed group approach and those that are individually oriented.

Figure 2E

Area of Concentration for Lab Assistance

Student name: _____ Vocational program: _____

Textbook assignment: _____

_____

Tests:

Material Covered: _____

_____

Expected date of test: _____

_____

Hands-on projects:

Expected period of instruction: _____

Demonstration time: _____

Specific weakness shown: _____

_____

_____

_____

Additional comments: _____

_____

_____

_____

_____
Vocational teacher's signature

In many vocational centers, separate special needs rooms also serve as resource centers for vocational instructors. In such situations, careful planning can eliminate noise interference from audio-visual equipment, office machinery, and instruction taking place in lab areas. The furniture and equipment in the rooms should be organized in such a way that a variety of instructional activities in differing formats can occur either singly or simultaneously. For example, individual audio-tutorial carrels allow students to work through self-paced practice materials while instructors work with other students. Instructors should designate work areas equipped with round tables and chalkboards for small group instruction. "Free" areas are those in which students can work independently on classwork or homework that was assigned by vocational instructors. Often, make-up work can be done in this "free" space. If students need assistance with the work, lab instructors or skilled students could be made available. The organization of the program should allow teachers of special needs students to fully utilize all existing materials and equipment as instructional variables.

Due to the increased awareness of a definite need for remedial and basal materials in areas of vocational training, it is the responsibility of special needs and vocational instructors to adapt or modify existing vocational materials. Many vocational texts are written well above the reading level of disadvantaged students enrolled in vocational education. Instructors may critique texts and develop learning activity packages (LAPs) that could be used by both vocational instructors and students as supplemental aids. Such aids may include transparencies, flip charts, graphs, worksheets, posters, flashcards, etc. Instructional units and booklets can be developed from the most important chapters of textbooks. For example, a unit of LAP on reading the micrometer could be developed and used as both an individual instructional tool or as a supplement to the existing material for the entire class.

Because of the learning characteristics usually displayed by disadvantaged students, instructional materials need to be reviewed repeatedly to insure mastery and thus to allow students to experience success. The practice material should bridge existing skills and new areas of application. It is sometimes necessary to pair learned material with new material to gradually introduce new applications of existing skills. For example, in learning to read a ruler, various applications of measuring skills can be introduced after students have demonstrated an understanding of the mechanics of measurement. Special needs instructors can design LAPs that are programmed sequential learning instruments. One LAP concept builds on another until students demonstrate mastery of the skill. Instructors should then provide an activity that would test the transferability of the learned concept to practical applications in the vocational shop setting.

Audio-tutorial programming, involving audio-visual equipment and headphones, is a useful strategy for delivering self-paced instruction. LAPs can be developed for students utilizing both commercially produced and teacher-made slide and video presentations. These materials are particularly good for use with students who need repeated drill or for students who are excessively absent and have missed material presented in the vocational shop area.

Most commercially produced materials depend on written presentation. For students with reading difficulties, this presents many problems. Special needs instructors may assess the disadvantaged students' comprehension of the text by having each read several passages and answer a series of both written and oral questions. This process will give instructors some insight on that student's specific

learning needs. For students who cannot comprehend the material due to poor vocabulary, prerecorded audiotape passages presenting pertinent material from the text may alleviate such weaknesses. Some students may comprehend the written word but having spelling and/or handwriting problems that hinder their ability to communicate in writing what has been read. Taking oral tests and audio-taping study notes may enable students to be more successful by compensating for reading deficiencies.

Testing

Taking tests is a tremendous task for most disadvantaged learners. Not only do they experience the fear of failure, they experience feelings of inadequacy in actually taking the test. Often tests are written in cursive form; and for students who have perceptual difficulties, many cursive letter styles are unintelligible. Tests should be objective in nature, without essay questions, and contain a variety of question formats (i.e., short answer, multiple choice, true-false, etc.). For those students who cannot comprehend the written word, vocational instructors, special needs teachers, or aides can administer tests orally and record responses. Oral tests must be completely coordinated with the programs of vocational instructors. Vocational instructors should keep tests simple, concise, and organized. Test items should reflect specific program objectives and be sequentially arranged. Scoring criteria should provide diagnostic information so that reinforcement activities can be developed according to the student's deficiences.

The vocational competence of students is tested to indicate the degree of success in meeting general and specific vocational objectives. For disadvantaged learners, a criterion-referenced test is the most appropriate assessment device. Norm-referenced tests compare disadvantaged learners to varying group standards, while criterion-referenced tests measure student performance on a competency-based standard. In vocational education, criteria standards are usually based on work standards for entry-level occupations.

Typical criterion-referenced testing tools are as follows.

1. **Checklist/Rating Scale.** These tests directly involve vocational teachers in systematically observing the performances and/or attitude of learners. With observation checklists and/or rating scales, vocational teachers check and/or rate specified criteria (i.e., traits, behaviors, or performances). Checklists are useful in assessing the ways a student performs a vocational task, while rating scales assist in evaluating the quality of resulting products or services.
2. **Paper and Pencil Tests.** These tests are usually constructed by vocational teachers to evaluate students' vocational knowledge. The tests are constructed to assess students' knowledge in relationship to occupationally (i.e., performance) based criteria. In other words, the standards expected by business, industry, or labor are the scoring criteria. With information from the tests, vocational instructors will be able to provide meaningful instruction to students. This information will also be a determining factor in deciding whether students require special assistance in order to be successful in vocational programs.

Summary of Strategies

The study of educating disadvantaged learners in vocational education is new and explorative. Strategies for teaching disadvantaged students are individualized

based upon unique learner characteristics. Vocational instructors must be sensitive to the individual needs and learning styles of disadvantaged students, and be able to present a variety of experiences that will foster learning in various situations. In summary, the following is a list of suggestions to consider when working with disadvantaged learners in vocational education (Woolard, 1979).

1. Determine what learners will need to know for future employment.
2. Strive for depth and mastery, rather than covering many areas without thorough learning. "Reduce the pace and increase the speed of learning."
3. Goals should be immediate and clear to students.
4. Stress the practical and immediately meaningful such as applications of learnings that students could use at home.
5. Procedures should be orderly and well planned to help give security and stability to disadvantaged learners.
6. Involve students in planning the above procedures.
7. Encourage learner expression, including learner-teacher planning and group activities.
8. Keep standards and work habits within learners' abilities.
9. Provide for purposeful drills:
   a. at the close of lessons
   b. at the close of units
   c. before regular evaluation
10. Directions should be simple, explicit, clear, and precise.
11. Provide written assignment sheets or have learners copy assignments in notebooks.
12. Supervised study is more desirable than homework.
13. Use demonstrations generously, making them concrete and tangible, rather than verbal and abstract; include illustration, audio-visual aids, field trips, and direct experiences.
14. Capitalize on individual student abilities such as artistic, social, mechanical, athletic, or other natural abilities.
15. Refrain from creating undue pressures.
16. Seek to bring out vocational ambitions that are realistic for individual students.

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STUDENT CHARACTERISTICS	TEACHER IMPLICATIONS
A SLOW RATE OF LEARNING.	PACE LEARNING FOR INDIVIDUAL NEEDS.
AN UNREALISTICALLY LOW SELF-CONCEPT.	ALWAYS GIVE PRAISE AND ENCOURAGEMENT FOR TASKS WELL DONE.
POOR RETENTION.	RE-EMPHASIZE IMPORTANT POINTS OF LESSON. USE AS MUCH TIME AS POSSIBLE FOR EACH PHASE OF LEARNING. GIVE ONLY A FEW RULES OR DIRECTIONS AT A TIME.
SHORTENED ATTENTION SPAN.	SHORTEN TEACHER ACTIVITIES, INCEASE STUDENT PARTICIPATION.
LIMITED ABILITY TO TRANSFER LEARNING.	SHOW PRACTICAL RELATIONSHIP FROM ONE LESSON TO ANOTHER AND TO EVERYDAY LIFE.
NEED TO BE TAUGHT SPECIFICALLY MUCH OF WHAT OTHER CHILDREN LEARN INCIDENTALLY.	NEVER TAKE ANYTHING FOR GRANTED IN TEACHING. BEGIN WITH BASIC CONCEPTS.
LOWER FRUSTRATION TOLERANCE.	MODIFY OR IMPLEMENT NEW APPROACHES, ELIMINATE COMPETITION BY PROVIDING INDIVIDUAL ASSIGNMENTS.
RESISTANCE TO CHANGE, LACKING ABILITY TO BE FLEXIBLE.	MAKE CHANGES GRADUALLY RELATING TO MATERIAL THAT HAS BEEN SUCCESSFULLY COMPLETED.
INEFFECTIVE RESPONSE TO LARGE GROUP INSTRUCTION.	LIMIT CLASS SIZE AND CONCENTRATE ON INDIVIDUAL INSTRUCTION.

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